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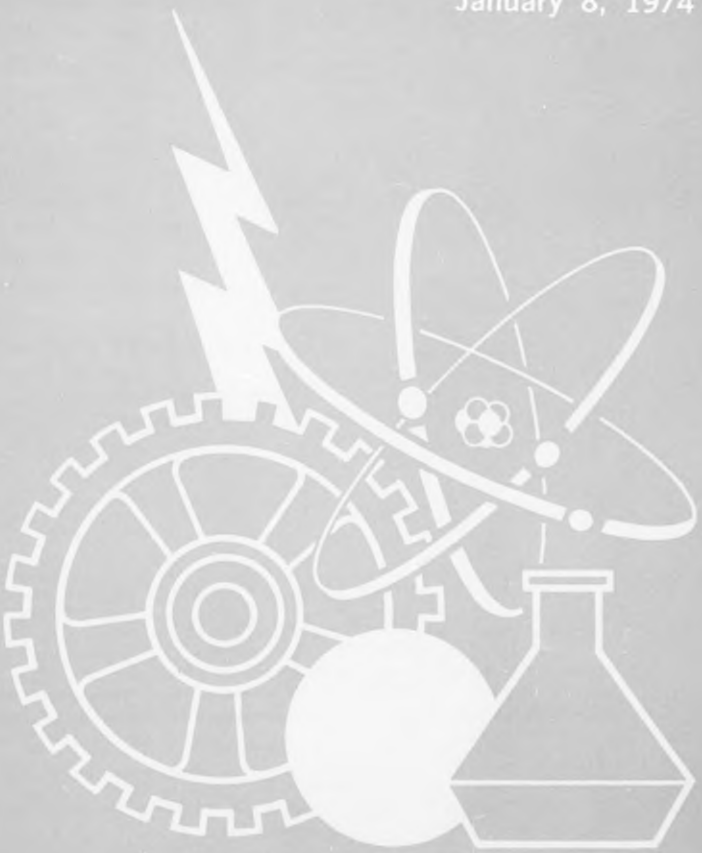

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CONTENTS

	Page
Patents and Trademark Notices	
Board of Appeals Decisions Rendered in the Month of November 1973	516
Registration to Practice	516
Patent Suits	519
Patent Notices	
Certificates of Correction for the Week of January 8, 1974	520
Disclaimer and Dedication	520
Disclaimers	520
Dedications	520
National Technical Information Service	520
Condition of Patent Applications	525
Reissue Patents Granted (27,870)	526
Plant Patents Granted (3,423)	530
Patents Granted	
General and Mechanical (3,783,449)	532
Chemical (3,784,355)	767
Electrical (3,784,717)	832
Design Patents Granted (229,796)	903
Index of Patentees	PI 1
Indices of Reissues, Plants and Designs	PI 45
Classification of	
Patents (Including Reissues)	PI 49
Designs and Plants	PI 52
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 53
Designs and Plants	PI 55

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PATENT OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of November 1973

Examiner affirmed	130
Examiner affirmed in part	17
Examiner reversed	27
Total	174

Registration to Practice

The following list contains the names of all applicants for registration to practice before the United States Patent Office who attained passing grades in the examination of September 11, 1973. Information tending to affect the eligibility of any of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before February 15, 1974.

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Zall, Michael E., 426 E. 23rd St., New York, N.Y. 10028

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,729,551, C. C. Cohn, SURFACE TREATMENT OF ALUMINUM AND ITS ALLOYS, **filed** May 4, 1973, D.C. Md. (Baltimore), Doc. 73–444–B, *Colonial Alloys Company (a partnership of Samuel L. Cohn and Charles C. Cohn)* v. *Easco Corporation.*

3,008,263, J. Ellman, BUBBLE PRODUCING TOY, **filed** May 21, 1973, D.C., S.D.N.Y., Doc. 73–C–2267, *George Lerner and Julius Ellman* v. *Ohio Art Company.*

3,072,582, C. B. Frost, POLYETHER-URETHANE FOAMS AND METHOD OF MAKING SAME, **filed** May 30, 1973, D.C. Del. (Wilmington), Doc. 4665, *BASF Wyandotte Corporation* v. *The General Tire and Rubber Company.*

3,079,728, A. K. Melin, HOOP TOY, **filed** May 25, 1973, D.C., E.D.N.Y. (Brooklyn), Doc. 73–C–743, *Wham-O Mfg. Co.* v. *All-American Yo-Yo Corporation.*

3,137,937, Cowan and Holtzman, EXPLOSIVE BONDING; **3,233,312,** same, EXPLOSIVELY BONDED PRODUCT, **filed** May 17, 1973, D.C. Colo. (Denver), Doc. C–5018, *E. I. du Pont de Nemours and Company* v. *E. F. Industries, Inc.*

3,139,213. (See 3,061,139.)

3,162,114, F. Quiroz, FRUIT JUICE EXTRACTION; **3,682,092,** G. C. Scott, RANGING SYSTEM USING PHASE DETECTION, **filed** Feb. 1, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–218–RJK, *Federated Machinery, Inc., Juice Tree, Inc. and Francisco A. Quiroz* v. *John Natalicio.* Judgment by consent, patent valid, by mesne assignments, plaintiff, Juice Tree Inc., now is the owner of the legal title thereto, defendant has infringed, permanently enjoined, May 30, 1973.

3,202,006, W. G. Lewellen, Jr., ROTATING MECHANISM FOR PLATING BARREL OR THE LIKE, **filed** June 2, 1972, D.C., E.D. Mich. (Detroit), Doc. 38390, *Imperial Industries, Inc.* v. *Rea A. York, doing business as C & R & D Industries.* Consent judgment: Court has jurisdiction, Imperial Industries, Inc. is the owner, patent valid, defendant has infringed, May 22, 1973.

3,233,312. (See 3,137,937.)

3,265,290, A. J. Cali, AXIAL FLOW COMPRESSORS FOR JET ENGINES, **filed** May 22, 1973, D.C., E.D.N.Y. (Brooklyn), Doc. 73–C–724, *Anthony J. Cali* v. *Braniff Airways, Inc. et ano.*

3,333,888, Williams and Williams, WALKING TRACTOR CABS, **filed** Jan. 22, 1973, D.C., N.D. Ind. (Fort Wayne), Doc. 73–F–13, *Original Tractor Cab Company, Incorporated* v. *International Harvester Company and Royal Industries, Inc.* Case dismissed. Plaintiff remains free to refile its claims in a district with proper vinue over the patent infringement claims, May 24, 1973.

3,389,242, L. A. Gross, Jr., CODED ELEMENT AND MEANS FOR USE THEREWITH, **filed** July 22, 1971, D.C., S.D. Ohio (Cincinnati), Doc. 8054, *Randomatic Data Systems* v. *Access Corporation.* Judgment: Court has jurisdiction over plaintiff and defendant, patent valid, plaintiff is owner of patent, defendant has infringed, May 23, 1973.

3,419,876, Edwards and Winterstein, STREAMLINED ANTENNA AND METHOD OF MAKING THE SAME, **filed** May 25, 1973, D.C., N.D. Ohio (Cleveland), Doc. C–73–534, *Sterling Manufacturing Co., doing business as Tunatronics, Ltd.* v. *Radio Shack, a division of Tandy Corp. and Ward Products Co.*

3,438,520, M. A. Williams, SLUG FILLING OF BINS, **filed** May 21, 1973, D.C., W.D. Okla. (Oklahoma City), Doc. 73–353–C, *CMI Corporation* v. *Metropolitan Enterprises, Inc. and Metropolitan Paving Company, Inc.*

3,514,074, R. E. Self, HIGH ENERGY LOSS FLUID CONTROL, **filed** May 31, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1211–EC, *Richard E. Self* v. *Fisher Controls Co., Inc. and Control Specialists, Inc.*

3,665,637, I. Starr, BUBBLE PIPE TOY, **filed** May 21, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1138–JWC, *Imperial Toy Corporation* v. *Chemtoy Corporation.*

3,670,089, Paton, Latash, Medovar, Emelianeko and Klujuev, APPARATUS FOR ELECTROSLAG REMELTING OF METALS WITH MOLTEN SLAG INTRODUCTION; **3,736,124,** same, METHOD FOR ELECTROSLAG REMELTING OF METALS WITH SLAG INTRODUCTION, **filed** Apr. 10, 1973, D.C. Pa. (Philadelphia), Doc. 73–831, *Patent Management Inc.* v. *Lukens Steel Company.*

3,671,264, Drews and Raffensperger, PACKAGED MIXES FOR FLAVORED FOOD PRODUCTS AND THE PROCESS OF MAKING THEM, **filed** Jan. 9, 1973, D.C., E.D. Tenn. (Knoxville), Doc. 8142, *The White Lily Foods Company* v. *Martha White Foods, Inc.* Case dismissed by stipulation, the defendant having taken a license, complaint dismissed with prejudice, Apr. 30, 1973.

3,682,092. (See 3,162,114.)

3,706,914, G. F. Van Buren, LIGHTING CONTROL SYSTEM, **filed** May 31, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1217–DWW, *Van Buren Industries, Inc.* v. *Century Strand, Inc. and Dennis Moore.*

3,736,124. (See 3,670,089.)

P.P. 2,056, H. C. Swim, ROSE PLANT; **P.P. 2,078,** same; **P.P. 2,592,** L. Lens, same, **filed** Oct. 10, 1972, D.C., E.D. Tex. (Tyler), Doc. 5595, *Armstrong Nurseries, Inc.* v. *Charles R. Cadey, Ty-Tex Rose Nurseries and Consolidated Nurseries, Inc.* Consent judgment: Plant patents owned by plaintiff, defendants have infringed and are hereby enjoined, Oct. 24, 1972.

P.P. 2,078. (See P.P. 2,056.)

P.P. 2,592. (See P.P. 2,056.)

Certificates of Correction for the Week of Jan. 8, 1974

D. 227,106	3,730,613	3,740,901	3,748,238
3,640,937	3,730,678	3,741,330	3,748,595
3,641,969	3,731,009	3,741,587	3,748,649
3,643,922	3,731,024	3,741,775	3,748,656
3,660,478	3,731,136	3,742,371	3,749,174
3,667,035	3,731,353	3,743,271	3,749,371
3,682,093	3,731,903	3,744,006	3,750,012
3,685,016	3,733,175	3,744,012	3,750,083
3,694,247	3,733,547	3,744,475	3,750,227
3,695,854	3,734,762	3,744,761	3,750,546
3,700,044	3,734,784	3,744,857	3,751,025
3,702,758	3,734,813	3,745,109	3,751,037
3,706,946	3,734,814	3,745,224	3,751,747
3,715,339	3,734,868	3,745,938	3,751,987
3,719,236	3,735,728	3,746,307	3,752,125
3,719,647	3,737,312	3,746,314	3,752,418
3,723,171	3,737,505	3,746,386	3,752,558
3,724,589	3,737,531	3,747,523	3,752,972
3,724,687	3,738,099	3,747,803	3,753,129
3,725,563	3,738,874	3,747,882	3,753,246
3,726,976	3,738,981	3,747,913	3,753,580
3,727,897	3,739,267	3,747,922	3,753,667
3,728,294	3,740,070	3,748,058	3,754,229
3,728,467	3,740,172	3,748,137	3,755,244
3,728,501	3,740,283	3,748,222	3,757,103

Disclaimer and Dedication

3,705,938.—*Seymour Hyman,* New York, N.Y., *Bruce S. Bernstein,* Somerville, N.J., and *Ramesh Kapoor,* Seaford, Del. ACTIVATED POLYMER MATERIALS AND PROCESS FOR MAKING SAME. Patent dated Dec. 12, 1972. Disclaimer and dedication filed Sept. 10, 1973, by the assignee, *Herculite Protective Fabrics Corporation.*

Hereby disclaims and dedicates claims 24, 30 and 67 of said patent.

Disclaimers

3,080,135.—*Roelof P. Steijn,* Wilmington, Del. TEXTILE APPARATUS. Patent dated Mar. 5, 1963. Disclaimer filed May 16, 1973, by the assignee, *E. I. du Pont de Nemours and Company.*

Hereby enters this disclaimer to claims 1–10 of said patent.

3,233,031.—*Walter Munch, Jr.,* Covington, Ky., and *Robert C. Scherer,* Cincinnati, Ohio. GATING CIRCUITS FOR ELECTRICAL MUSICAL INSTRUMENTS. Patent dated Feb. 1, 1966. Disclaimer filed Oct. 11, 1973, by the assignee, *D. H. Baldwin Company.*

Hereby enters this disclaimer to claims 12, 13, 14 and 15 of said patent.

3,350,611.—*Robert I. Scace,* Skaneateles, N.Y. GATE FIRED BIDIRECTIONAL SWITCH. Patent dated Oct. 31, 1967. Disclaimer filed Nov. 26, 1973, by the assignee, *General Electric Company.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5, 6, 7, 8 and 9 of said patent.

3,755,940.—*Vincent Anderson,* Chicago, Ill. THREE-MONTH WATCH BAND CALENDAR WITH JEWELRY LIKE SURFACE. Patent dated Sept. 4, 1973. Disclaimer filed Mar. 19, 1973, by the assignee, *Chicago Etching Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Jan. 16, 1990.

3,762,313.—*Charles M. Schott, Jr.,* Gloucester, Mass. EXTRUDING PLASTIC. Patent dated Oct. 2, 1973. Disclaimer filed May 29, 1973, by the assignee, *Gloucester Engineering Co. Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Feb. 29, 1989.

Dedications

2,750,674.—*John W. Lee,* Festus, Mo. GLASS CUTTER. Patent dated June 19, 1956. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates for the remainder of its term to the free use and benefit of the People of the United States.

2,755,518.—*Charles E. Stroud,* Tarentum, Pa. SAFETY WINDOW CONSTRUCTION. Patent dated July 24, 1956. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates for the remainder of its term to the free use and benefit of the People of the United States.

2,756,545.—*Florian V. Atkeson,* Springdale, Pa. AUTOMATIC GLASS CUTTING MACHINE. Patent dated July 31, 1956. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates for the remainder of its term to the free use and benefit of the People of the United States.

2,757,491.—*William F. Galey,* Tarentum, Pa. PLASTIC POLISHING RUNNER. Patent dated Aug. 7, 1956. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates for the remainder of its term to the free use and benefit of the People of the United States.

2,758,042.—*Richard F. Raymond,* Saxonburg, and *Emil A. Fusca,* Pittsburgh, Pa. SAFETY GLASS CONSTRUCTION. Patent dated Aug. 7, 1956. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates for the remainder of its term to the free use and benefit of the People of the United States.

3,543,447.—*Alec Leibowitz,* London, England. APPARATUS TO CONTROL GRAVITATIONAL MOVEMENT OF A GEM STONE POLISHING TANG TOWARDS A STONE POLISHING SURFACE. Patent dated Dec. 1, 1970. Dedication filed Sept. 7, 1973, by the assignee. *Spectrum Diamonds (Proprietary) Ltd.*

Hereby dedicates the entire remaining term of said patent to the Public.

National Technical Information Service

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Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

ATOMIC ENERGY COMMISSION
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Washington, D.C. 20545

Patent 3,733,130. Slotted Probe for Spectroscopic Measurements. Filed Mar. 7, 1972. Patented May 15, 1973. Not available NTIS.

DEPARTMENT OF TRANSPORTATION

Patent Counsel, 400 7th Street SW., Washington, D.C. 20590

Patent application 372,749. Automotive Exhaust System Leak Test. Filed June 22, 1973. PC $3/MF $1.45.

Patent application 395,241. Condition Responsive Control Apparatus. Filed Sept. 7, 1973. PC $3/MF $1.45

DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Streets NW., Washington, D.C. 20240

Patent 3,763,830. Apparatus for Burning Sulfur Containing Fuels. Filed Jan. 24, 1973. Patented Oct. 9, 1973. Not available NTIS.

DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research, Code 302, Arlington, Va. 22217

Patent 3,500,145. Thin Vapor-Deposited Metal Film Voltage Regulator. Filed Mar. 1, 1967. Patented Mar. 10, 1970. Not available NTIS.

Patent 3,500,172. High Voltage, High Power Series Regulator. Filed June 21, 1967. Patented Mar. 10, 1970. Not available NTIS.

Patent 3,513,332. Polyphase Power Interruption Apparatus Including Bidirectional Semiconductors. Filed July 27, 1967. Patented May 19, 1970. Not available NTIS.

Patent 3,514,949. Turboprop Fuel Control for Use With Contaminated or Varied Fuels. Filed June 18, 1968. Patented June 2, 1970. Not available NTIS.

Patent 3,515,449. Soft Rubber, Squeeze Film Bearing. Filed Sept. 10, 1968. Patented June 2, 1970. Not available NTIS.

Patent 3,517,170. System or Apparatus for Optimizing the Operation of a Combustion Process. Filed May 29, 1967. Patented June 23, 1970. Not available NTIS.

Patent 3,517,550. Load and Rate of Change of Load Detection System. Filed May 8, 1968. Patented June 30, 1970. Not available NTIS.

Patent 3,518,121. Nonaqueous Ammonia Primary Cell Utilizing Nitrated Polystyrene Cathode Oxidant. Filed July 16, 1969. Patented June 30, 1970. Not available NTIS.

Patent 3,520,793. Electrophoretic Separator. Filed Sept. 29, 1967. Patented July 14, 1970. Not available NTIS.

Patent 3,521,189. Multiple Crystal High Power Laser Design. Filed Jan. 3, 1967. Patented July 21, 1970. Not available NTIS.

Patent 3,522,037. Stainless Steel Compositions With Increased Corrosive Resistance. Filed Oct. 31, 1966. Patented July 28, 1970. Not available NTIS.

Patent 3,523,514. Salvage Pontoon. Filed Nov. 27, 1968. Patented Aug. 11, 1970. Not available NTIS.

Patent 3,524,276. Elimination of Jellyfish and the Like. Filed Jan. 26, 1968. Patented Aug. 18, 1970. Not available NTIS.

Patent 3,526,745. Welding Machine. Filed Sept. 12, 1966. Patented Sept. 1, 1970. Not available NTIS.

Patent 3,527,919. Extended Electrode Welding Technique. Filed Feb. 5, 1969. Patented Sept. 8, 1970. Not available NTIS.

Patent 3,528,165. Corrosion Inhibiting Process. Filed Apr. 24, 1967. Patented Sept. 15, 1970. Not available NTIS.

Patent 3,532,176. Contoured Sidewalls for Captured Air Bubble Surface Effect Ships. Filed May 29, 1968. Patented Oct. 6, 1970. Not available NTIS.

Patent 3,532,180. Semi-Flexible Seal for Captured Air Bubble Vehicle. Filed May 17, 1968. Patented Oct. 6, 1970. Not available NTIS.

Patent 3,533,870. Method of Fabricating a Flexible Impregnated Glass Fiber Tether Having Maximum Strength Properties. Filed July 21, 1966. Patented Oct. 13, 1970. Not available NTIS.

Patent 3,533,897. Optically Clear Roughened Glass and Method for Making Same. Filed June 19, 1967. Patented Oct. 13, 1970. Not available NTIS.

Patent 3,535,246. Heat Producing Composition and Method of Employment. Filed Mar. 21, 1968. Patented Oct. 20, 1970. Not available NTIS.

Patent 3,541,503. Optical Glide Slope Reference Indicator for Aircraft. Filed Oct 27, 1969. Patented Nov. 17, 1970. Not available NTIS.

Patent 3,544,421. Filament Wound Structural Laminates. Filed May 31, 1967. Patented Dec. 1, 1970. Not available NTIS.

Patent 3,546,151. Water Repellent Corrosion Inhibiting Composition. Filed June 10, 1968. Patented Dec. 8, 1970. Not available NTIS.

Patent 3,548,411. Retractable Goggles for Helmet. Filed Feb. 26, 1969. Patented Dec. 22, 1970. Not available NTIS.

Patent 3,549,155. Helically Cut Sleeve Seal. Filed Apr. 26, 1968. Patented Dec. 22, 1970. Not available NTIS.

Patent 3,551,850. Suppressed-Carrier Modulator. Filed Nov. 14, 1968. Patented Dec. 29, 1970. Not available NTIS.

Patent 3,700,939. Ferroelectric Ceramic Stack. Filed Sept. 10, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,945. High Power Pulsed Electron Beam. Filed Aug. 30, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,952. High Power Pulsed Microwave Source. Filed Aug. 30, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,701,057. Broad-Band Lumped-Element Directional Coupler. Filed May 20, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,701,059. Remote Controlled, Adjustable Bandwidth Low Pass Filter. Filed Apr. 16, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,701,143. Walsh Function Generator. Filed Aug. 24, 1970. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,701,144. High Frequency Analog-to-Digital Converter. Filed Oct. 28, 1970. Patented Oct. 24, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

Patent application 237,491. Integrated Lift/Drag Controller for Aircraft. Filed Mar. 23, 1972. PC $3.25/MF $1.45.

Patent application 307,714. Aircraft-Mounted Crash-Activated Radio Device. Filed Nov. 17, 1972. PC $3/MF $1.45.

Patent application 332,529. Temperature Measurement System. Filed Feb. 14, 1973. PC $3/MF $1.45.

Patent application 350,300. Apparatus and Method of Molding. Filed Apr. 11, 1973. PC $3/MF $1.45.

Patent application 379,049. Evacuated Displacement Compression Molding. Filed July 13, 1973. PC $3/MF $1.45.

Patent application 386,793. Holographic System for Nondestructive Testing. Filed Aug. 8, 1973. PC $3/MF $1.45.

Patent application 387,094. A Guide for a Typewriter. Filed Aug. 9, 1973. PC $3/MF $1.45.

Patent application 389,916. Variable Ratio Mixed-Mode Bilateral Master-Slave Control System for Shuttle Remote Manipulator System. Filed Aug. 20, 1973. PC $3.25/MF $1.45.

Patent application 390,466. A Method for Making Conductors for Ferrite Memory Arrays. Filed Aug. 22, 1973. PC $3/MF $1.45.

Patent application 390,467. Raw Liquid Waste Treatment System and Process. Filed Aug. 22, 1973. PC $3.25/MF $1.45.

Patent application 392,823. Remote Fire Stack Igniter. Filed Aug. 29, 1973. PC $3/MF $1.45.

Patent application 393,523. Material Suspension Within an Acoustically Excited Resonant Chamber. Filed Aug. 31, 1973. PC $3.50/MF $1.45.

Patent application 393,525. Apparatus for Forming Drive Belts. Filed Aug. 31, 1973. PC $3.25/MF $1.45.

Patent application 395,687. Shock Absorbing Mount for Electrical Components. Filed Sept. 10, 1973. PC $3/MF $1.45.

Patent 3,395,565. Gauge Calibration by Diffusion. Patented Aug. 6, 1968. Not available NTIS.

Patent 3,446,075. Apparatus for Absolute Pressure Measurement. Patented May 27, 1969. Not available NTIS.

Patent 3,745,082. Semiconductor Surface Protection Material. Patented July 10, 1973. Not available NTIS.

Patent 3,745,410. Driving Lamps by Induction. Patented July 10, 1973. Not available NTIS.

Patent 3,745,475. Measurement System. Patented July 10, 1973. Not available NTIS.

Patent 3,748,853. Swirl Can Primary Combustor. Patented July 31, 1973. Not available NTIS.

Patent 3,748,905. Vacuum Probe Surface Sampler. Patented July 31, 1973. Not available NTIS.

Patent 3,749,123. Dual Stage Check Valve. Patented July 31, 1973. Not available NTIS.

Patent 3,749,156. Thermal Control System for a Spacecraft Modular Housing. Patented July 31, 1973. Not available NTIS.

Patent 3,749,205. Metal Shearing Energy Absorber. Patented July 31, 1973. Not available NTIS.

Patent 3,749,362. Fastener Stretcher. Patented July 31, 1973. Not available NTIS.

Patent 3,749,911. Collimator of Multiple Plates With Axially Aligned Identical Random Arrays of Apertures. Patented July 31, 1973. Not available NTIS.

Patent 3,750,016. RF-Source Resistance Meters. Patented July 31, 1973. Not available NTIS.

Patent 3,750,067. Ferrofluidic Solenoid. Patented July 31, 1973. Not available NTIS.

Patent 3,750,131. Silent Emergency Alarm System for Schools and the Like. Patented July 31, 1973. Not available NTIS.

Patent 3,750,168. Apparatus for Aiding a Pilot in Avoiding a Midair Collision Between Aircraft. Patented July 31, 1973. Not available NTIS.

Patent 3,751,123. Low Mass Rolling Element for Bearings. Patented Aug. 7, 1973. Not available NTIS.

Patent 3,752,559. Ritchey-Chretien Telescope. Patented Aug. 14, 1973. Not available NTIS.

Patent 3,752,564. Optical Data Processing Using Paraboloidal Mirror Segments. Patented Aug. 14, 1973. Not available NTIS.

Patent 3,752,986. Compton Scatter Attenuation Gamma Ray Spectrometer. Patented Aug. 14, 1973. Not available NTIS.

Patent 3,752,993. Spacecraft Attitude Sensor. Patented Aug. 14, 1973. Not available NTIS.

Patent 3,744,912. Holographic Thin Film Analyzer. Patented July 10, 1973. Not available NTIS.

[FR Doc. 73-26204; Filed 12-11-73; 8:45 am]

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA Patent Licensing Regulations.

Copies of patent applications, either paper Copy (PC) or Microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title. Requests for licensing information should be directed to the address cited with each copy of the patent application.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents,
Washington, D.C. 20545

Patent 3,725,659. Thermoluminescence Dosimeter System. Filed Mar. 16, 1971. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,736,429. Random Source Interrogation System. Filed June 28, 1972. Patented May 29, 1973. Not available NTIS.

Patent 3,737,789. Count Rate Discriminator. Filed Dec. 21, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,738,171. Attenuation Compensation for Ultrasonic Thermometers. Filed Apr. 26, 1972. Patented June 12, 1973. Not available NTIS.

Patent 3,740,554. Multi-Ampere Duopigatron Ion Source. Filed Apr. 13, 1972. Patented June 19, 1973. Not available NTIS.

DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Streets NW.,
Washington, D.C. 20240

Patent 3,761,713. Method of Detecting Loose Rock. Filed July 13, 1971. Patented Sept. 25, 1973. Not available NTIS.

Patent 3,763,055. Microporous Support for Reverse Osmosis Membranes. Filed July 7, 1971. Patented Oct. 2, 1973. Not available NTIS.

Patent 3,763,493. Recovery of Nickel and Cobalt. Filed Aug. 31, 1972. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,764,540. Magnetofluids and Their Manufacture. Filed May 28, 1971. Patented Oct. 9, 1973. Not available NTIS.

DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research,
Code 302, Arlington, Va. 22217

Patent 3,701,147. Surface Wave Devices for Signal Processing. Filed Feb. 3, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,701,152. Bipolar Sample and Hold Circuit. Filed July 20, 1970. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,701,954. Adjustable Pulse Train Generator. Filed July 7, 1971. Patented Oct. 31, 1972. Not available NTIS.

Patent 3,702,395. Condenser System for High Intensity Light Source. Filed Oct. 9, 1970. Patented Nov. 7, 1972. Not available NTIS.

Patent 3,702,597. Salvage Work Vehicle. Filed Apr. 7, 1971. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,703,012. Close Packing of Uniform Size Spheres. Filed Dec. 12, 1969. Patented Nov. 21, 1972. Not available NTIS.

Patent 3,703,719. Sequence Matrix. Filed May 31, 1967. Patented Nov. 21, 1972. Not available NTIS.

Patent 3,703,894. Rigid Foam Polyurethane Hand Splint. Filed Feb. 16, 1971. Patented Nov. 28, 1972. Not available NTIS.

Patent 3,703,968. Linear Linkage Manipulator Arm. Filed Sept. 20, 1971. Patented Nov. 28, 1972. Not available NTIS.

Patent 3,704,420. Automatic Frequency Control for Suppressed Carrier Receivers. Filed July 20, 1970. Patented Nov. 28, 1972. Not available NTIS.

Patent 3,704,463. Direction Finding Antenna System. Filed June 2, 1970. Patented Nov. 28, 1972. Not available NTIS.

Patent 3,704,673. Light Weight Pallet Construction. Filed Jan. 20, 1971. Patented Dec. 5, 1972. Not available NTIS.

Patent 3,704,966. Method and Apparatus for Rock Excavation. Filed Sept. 13, 1971. Patented Dec. 5, 1972. Not available NTIS.

Patent 3,706,535. Carbon Monoxide Burner for Undersea Habitats. Filed Nov. 23, 1970. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,621. Vacuum Process for Application of Sheet Coatings. Filed Jan. 7, 1970. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,651. Apparatus for Electroplating a Curved Surface. Filed Dec. 30, 1970. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,691. Depotting Solvent. Filed Sept. 4, 1970. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,772. Fluorodiglycidyl Ethers. Filed Mar. 23, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,932. Amplitude Independent, Automatic Frequency Control/Discriminator. Filed Jan. 7, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,967. Underwater Acoustic Projector. Filed Jan. 21, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,707,483. Fluorinated Monoglycidyl Ethers. Filed Feb. 4, 1971. Patented Dec. 26, 1972. Not available NTIS.

Patent 3,711,139. Pressure Actuated Spring Biased Latch. Filed Aug. 20, 1971. Patented Jan. 16, 1973. Not available NTIS.

Patent 3,711,351. Method of Impregnating Inorganic Filament Strands. Filed Sept. 9, 1970. Patented Jan. 16, 1973. Not available NTIS.

Patent 3,711,514. Highly Fluorinated Alkyl Esters of Trimellitic Acid Anhydride and Method for Their Production. Filed Feb. 12, 1970. Patented Jan. 16, 1973. Not available NTIS.

Patent 3,711,586. Method of Increasing Tensile Strength of Plastic Materials. Filed Mar. 18, 1971. Patented Jan. 16, 1973. Not available NTIS.

Patent 3,712,131. Heat Flux Indicator. Filed Feb. 22, 1971. Patented Jan. 23, 1973. Not available NTIS.

Patent 3,713,034. Audio Signal Controlled Amplitude Modulation Circuit of Square Wave Output. Filed Oct. 26, 1971. Patented Jan. 23, 1973. Not available NTIS.

Patent 3,713,394. Smoke Signal Device. Filed Mar. 1, 1971. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,713,414. System for Attachment to and Lifting of Objects From Deep Water. Filed Aug. 26, 1965. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,713,548. Folded Tensioned Highline System. Filed Oct. 21, 1971. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,713,636. Incendiary Cutting Torch for Underwater Use. Filed Sept. 22, 1970. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,713,750. Circulation Control Rotor System. Filed Dec. 7, 1970. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,714,430. Photoelement Intense Radiation Protective Device. Filed May 19, 1967. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,721,994. Dual Visor Headgear. Filed Mar. 29, 1971. Patented Mar. 27, 1973. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters, NASA—
Code GP-2, Washington, D.C. 20546

Patent application 253,725. Three-Axis, Adjustable Loading Structure. Filed May 16, 1972. PC $3/MF $1.45.

Patent application 280,029. Bimetallic Fluid Displacement Apparatus. Filed Aug. 11, 1972. PC $3/MF $1.45.

Patent application 280,032. Heater-Mixer for Stored Fluids. Filed Aug. 11, 1972. PC $3/MF $1.45.

Patent application 310,193. Photomultiplier Circuit Including Means for Rapidly Reducing the Sensitivity Thereof. Filed Nov. 28, 1972. PC $3/MF $1.45.

Patent application 321,180. Single Wing Supersonic Aircraft. Filed Jan. 5, 1973. PC $4/MF $1.45.

Patent application 387,095. An Improved System for Enhancing Tool Exchange Capabilities of a Portable Wrench. Filed Aug. 9, 1973. PC $3.25/MF $1.45.

Patent application 386,790. Automatically Operable Self-Leveling Load Table. Filed Aug. 8, 1973. PC $3.25/MF $1.45.

Patent 3,452,103. Fluorohydroxy Ethers. Patented June 24, 1969. Not available NTIS.

Patent 3,463,761. Polyurethanes of Fluorine Containing Polycarbonates. Patented Aug. 26, 1969. Not available NTIS.

Patent 3,463,762. Polyurethanes From Fluoroalkyl Propyleneglycol Polyethers. Patented Aug. 26, 1969. Not available NTIS.

Patent 3,475,384. Fluorine Containing Polyurethane. Filed Oct. 28, 1969. Not available NTIS.

Patent 3.577,356. Highly Fluorinated Polymers. Patented May 4, 1971. Not available NTIS.

Patent 3,745,352. Radiation Sensitive Solid State Switch. Patented July 10, 1973. Not available NTIS.

Patent 3,746,998. Automatic Carrier Acquisition System. Patented July 17, 1973. Not available NTIS.

Patent 3,749,831. Television Multiplexing System. Patented July 31, 1973. Not available NTIS.

Patent 3,751,913. Barium Release System. Patented Aug. 14, 1973. Not available NTIS.

Patent 3,752,847. Fluorinated Esters of Polycarboxylic Acids. Patented Aug. 14, 1973. Not available NTIS.

Patent application 287,149. Stagnation Pressure Prove. Filed Sept. 7, 1972. PC $3/MF $1.45.

Patent application 294,727. Nuclear Thermionic Converter. Filed Oct. 3, 1972. PC $3/MF $1.45.

Patent application 301,417. Auditory Display for the Blind. Filed Oct. 27, 1972. PC $3/MF $1.45.

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Patent application 317,567. Method of Producing a Storage Bulb for an Atomic Hydrogen Maser. Filed Dec. 22, 1972. PC $3/MF $1.45.

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Patent application 329,243. Solid Propellant and Method of Preparation. Filed Feb. 2, 1973. PC $3.25/MF $1.45.

Patent application 340,864. Method of Fabricating an Object With a Thin Wall Having a Precisely Shaped Slit. Filed Mar. 13, 1973. PC $3/MF $1.45.

Patent application 343,607. Thrust Isolating Mounting. Filed Mar. 21, 1973. PC $3.75/MF $1.45.

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Patent application 346,341. Hollow Rolling Element Bearings. Filed Mar. 30, 1973. PC $3/MF $1.45.

[FR Doc. 73-26205; Filed 12-11-73; 8:45 am]

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA Patent Licensing Regulations.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title. Requests for licensing information should be directed to the address cited with each copy of the patent application.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

DEPARTMENT OF THE ARMY

Chief, Patents Division, Pentagon, Office of the Judge Advocate General, Patent Division, Rm. 2C-455, Washington, D.C. 20310

Patent 3,715,668. Air-Launched Radio Apparatus. Filed Sept. 26, 1967. Patented Feb. 6, 1973. Not available NTIS.

Patent 3,715,689. Wideband Microwave Power Divider. Filed Feb. 10, 1972. Patented Feb. 6, 1973. Not available NTIS.

Patent 3,715,692. Microstrip-Slot Line Phase Shifter. Filed Jan. 10, 1972. Patented Feb. 6, 1973. Not available NTIS.

Patent 3,717,580. Method of Disinfecting and Self-Limiting Solution Therefor. Filed Dec. 2, 1969. Patented Feb. 20, 1973. Not available NTIS.

ATOMIC ENERGY COMMISSION

Assistant General Counsel for Patents, Washington, D.C. 20545

Patent 3,725,294. Method for Dissolving Plutonium Dioxide. Filed Jan. 27, 1972. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,730,833. Scavengers for Radioactive Iodine. Filed May 17, 1971. Patented May 1, 1973. Not available NTIS.

Patent 3,733,265. Cross-Flow Filtration Process for Removal of Total Organic Carbon and Phosphates From Aqueous Sewage Effluents. Filed Nov. 22, 1971. Patented May 15, 1973. Not available NTIS.

Patent 3,733,760. Reactor Vessel. Filed Mar. 5, 1970. Patented May 22, 1973. Not available NTIS.

Patent 3,736,658. Thermionic Gas-Pressure-Bonded Sheathed Insulators and Method of Producing Same. Filed Oct. 12, 1970. Patented June 5, 1973. Not available NTIS.

Patent 3,742,219. High Energy Neutral Particle Beam Source. Filed June 23, 1971. Patented June 26, 1973. Not available NTIS.

DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Streets, NW., Washington, D.C. 20240.

Patent application 393,385. Recovery of Sulfur. Filed Aug. 31, 1973. PC $3/MF $1.45.

Patent 3,760,868. Disposal of Waste Heat. Filed Jan. 28, 1971. Patented Sept. 25, 1973. Not available NTIS.

Patent 3,760,949. Sealing Means for Hollow Fiber Bundles. Filed Aug. 13, 1971. Patented Sept. 25, 1973. Not available NTIS.

Patent 3,761,622. Amplitude Modulated Telemetering System. Filed Nov. 23, 1970. Patented Sept. 25, 1973. Not available NTIS.

Patent 3,761,708. Electron Suppressor Grid for a Mass Spectrometer. Filed Oct. 8, 1971. Patented Sept. 25, 1973. Not available NTIS.

DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research, Code 302, Arlington, Va. 22217

Patent 3,712,232. Variable Delay Fuse for Aircraft Parachute Flare. Filed Oct. 23, 1968. Patented Jan. 23, 1973. Not available NTIS.

Patent 3,714,069. Corrosion Preventing Composition. Filed Dec. 17, 1970. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,714,189. Phenylated Pyromellitimides. Filed July 22, 1971. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,714,498. Television camera. Filed Feb. 16, 1970. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,714,552. Method of Reducing Errors Arising From the Radio Frequency Oscillator System of Optically Pumped Magnetometers. Filed Jan. 19, 1972. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,714,601. Variable Direct Current Bias Control Circuit for Linear Operation of Radio Frequency Power Transistors. Filed Oct. 14, 1971. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,714,661. Method and Apparatus for Coupling Multiple Power Sources to Single Radiating Antenna. Filed Jan. 24, 1972. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,714,777. Pressure Differential Limiter. Filed July 6, 1970. Patented Feb. 6, 1973. Not available NTIS.

Patent 3,714,830. Water Sampling Device. Filed Mar. 26, 1971. Patented Feb. 6, 1973. Not available NTIS.

Patent 3,715,574. Interface Converter for Feeding High Frequency Signals Into Low Frequency Circuits. Filed July 21, 1971. Patented Feb. 6, 1973. Not available NTIS.

Patent 3,715,654. Crystal Magnetometer and Gradiometer. Filed June 4, 1970. patented Feb. 6, 1973. Not available NTIS.

Patent 3,715,748. Method and Apparatus for Measuring the Intensity of Atmospheric Turbulence. Filed Apr. 30, 1971. Patented Feb. 6, 1973. Not available NTIS.

Patent 3,716,424. Method of Preparation of Lead Sulfide PN Junction Diodes. Filed Apr. 2, 1970. Patented Feb. 13, 1973. Not available NTIS.

Patent 3,716,711. Water Level Gauge Using Neutron Source. Filed June 18, 1971. Patented Feb. 13, 1973. Not available NTIS.

Patent 3,718,570. Cathodic Protection Anode With Sections Replaceable Underwater. Filed June 1, 1970. Patented Feb. 27, 1973. Not available NTIS.

Patent 3,719,610. Low Loss Electrical Conductive Coating and Bonding Materials Including Magnetic Particles for Mixing. Filed Aug. 4, 1971. Patented Mar. 6, 1973. Not available NTIS.

Patent 3,720,093. Carbon Dioxide Indicating Meter. Filed Dec. 3, 1970. Patented Mar. 13, 1973. Not available NTIS.

Patent 3,720,101. Automatic Spring Rate Plotter. Filed July 23, 1971. Patented Mar. 13, 1973. Not available NTIS.

Patent 3,720,166. Apparatus and Method for Terrain Clearance. Filed Aug. 2, 1971. Patented Mar. 13, 1973. Not available NTIS.

Patent 3,720,611. Gelation Inhibited Silicone Fluids. Filed Mar. 23, 1971. Patented Mar. 13, 1973. Not available NTIS.

Patent 3,720,639. Fluorinated Polyols. Filed June 24, 1971. Patented Mar. 13, 1973. Not available NTIS.

Patent 3,720,736. Process for the Synthesis of Dihydro Carbonphosphinates. Filed Mar. 17, 1970. Patented Mar. 13, 1973. Not available NTIS.

Patent 3,720,834. High Power Infrared Imaging Device. Filed June 15, 1971. Patented Mar. 13, 1973. Not available NTIS.

Patent 3,721,207. Collection and Disposal of Ship's Sewage. Filed Apr. 15, 1971. Patented Mar. 20, 1973. Not available NTIS.

Patent 3,721,408. Variable Mode Sling for Helicopter Recovery Systems. Filed Nov. 19, 1971. Patented Mar. 20, 1973. Not available NTIS.

Patent 3,721,500. Instrument for Measuring the Depolarization of Backscattered Light. Filed Aug. 6, 1971. Patented Mar. 20, 1973. Not available NTIS.

Patent 3,721,763. Single Line Bi-Directional Data Transmission System. Filed July 29, 1971. Patented Mar. 20, 1973. Not available NTIS.

Patent 3,721,764. Auditory Test Facility With Multistage Single Sideband Heterodyning. Filed Jan. 14, 1970. Patented Jan. 20, 1973. Not available NTIS.

Patent 3,722,967. Low Heat Generation Turbine Engine Bearing. Filed Oct. 26, 1971. Patented Mar. 27, 1973. Not available NTIS.

Patent 3,723,207. Process for Preparing Stable Essentially Water-Free Slurries of Nitrocellulose and Products Thereof. Filed Oct. 23, 1970. Patented Mar. 27, 1973. Not available NTIS.

[FR Doc. 73-26206; Filed 12-11-73; 8:45 am]

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF DECEMBER 22, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-02-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-12-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-11-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-02-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-01-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-16-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	9-01-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-02-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food: Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-17-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices, Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	1-15-73
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	2-17-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	3-08-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-10-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	3-02-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-12-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-28-72

Expiration of patents: The patents within the range of numbers indicated below expire during December 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... **Numbers 2,772,415 to 2,775,761, inclusive**
Plant Patents..... **Numbers 1,532 to 1,542, inclusive**

REISSUES

JANUARY 8, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,870

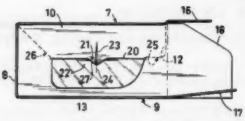
FOLDABLE BLANKS AND CARTONS, BOXES, TRAYS OR PACKING CASES MADE THEREFROM

Karl Rune Persson, Halmstad, Sweden, assignor to AB Ahlen & Akerlund, Forpackning, Halmstad, Sweden

Original No. 3,112,854, dated Dec. 3, 1963, Ser. No. 140,004, Sept. 22, 1961. Application for reissue Mar. 26, 1973, Ser. No. 345,236

Int. Cl. B65d *5/18*

U.S. Cl. 229—39 R **14 Claims**



A carton formed of a blank having fold lines to form at least bottom and side panels when folded along the fold lines. Pairs of cooperating engaging panels are interlocked with one another by the provision of an insertion slot in one panel and a cooperating tab forming the slot in the other panel. One of the pair of panels is inserted into the slot of the other panel until the edge of one panel engages a fold line along which the other panel is folded, to assure registry of the cooperating slots with the tab portion of the tab being offset from the other slot. Interlocking is obtained by applying sidewise pressure to the tab thereby snapping the tab over a portion of the other slot.

27,871

POSITION CONTROL SYSTEMS FOR AN ARTICLE HANDLING APPARATUS

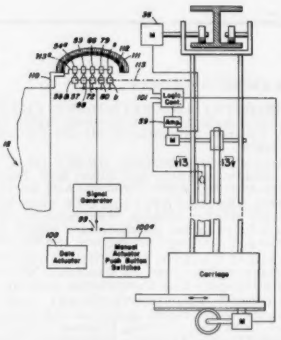
Ward F. O'Connor, Denville, N.J., assignor to The Lummus Company, New York, N.Y.

Original No. 3,406,846, dated Oct. 22, 1968, Ser. No. 651,791, July 7, 1967. Application for reissue Oct. 16, 1970, Ser. No. 81,338

Int. Cl. B65g *1/06*

U.S. Cl. 214—16.4 A **22 Claims**

Automated warehouse apparatus operating at a central point for continuously controlling a load transporting carriage located at a remote point to retrieve a load from a preselected storing space or to place a load therein, and comprising a plurality of groups of discrete electric buses, each group including continuous electric conductors and segmented conductors, for continuously transmitting instructional signals from the central point to the remote point and vice versa, and a plurality of electric motors located on the carriage and controlled by the instructional signals continuously transmitted on the electric buses for providing the necessary X, Y and Z movements of certain components of the carriage to achieve the load retrieval or placement actions. An amplifier derives low values of direct current from low voltages of direct current voltage to provide the instructional signals.



27,872

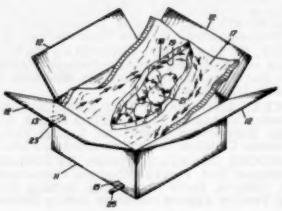
CARTON

Joseph J. Esty, San Diego, Calif., assignor of a fractional part interest to Oberlin J. Evenson, San Diego, Calif.

Original No. 3,521,806, dated July 28, 1970, Ser. No. 645,968, June 14, 1967. Application for reissue Mar. 22, 1971, Ser. No. 126,652

Int. Cl. B65d *5/60, 81/20*

U.S. Cl. 229—14 B **5 Claims**



A package for preserving perishable products, such as food and flowers, in which the product is in an impermeable container which has been purged, after the product is in the container, by forcing an inert gas through the container. The composite package includes the container enclosed in an inherently stable carton.

27,873

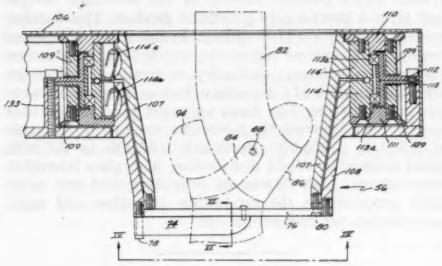
DEBONING APPARATUS

Ferdinand Weits, Holland, and Theodore C. Zwiep, Grand Rapids, Mich., assignors to Prince Manufacturing Company, Holland, Mich.

Original No. 3,457,586, dated July 29, 1969, Ser. No. 720,052, Apr. 10, 1968. Application for reissue July 22, 1971, Ser. No. 166,324

Int. Cl. A22b *5/00;* **A22c** *17/00*

U.S. Cl. 17—1 G **30 Claims**



This disclosure relates to a method and apparatus for removing meat from bones. The meat is removed by plowing the meat away from the bone by a plurality of dull plow members which rotate about the bone and are urged against the bone to force the meat away from and separate it from the bone without cutting the meat. Special tools are disclosed for holding the different ends of the bone so that the bone can be held without crushing during the deboning operation. Special tools are also disclosed for removing kneecaps and fibula bones prior to the meat stripping operation.

27,874

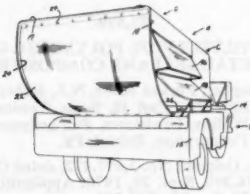
SHROUD FOR SEWER CLEANING TRUCK

Benjamin P. Fisco, Jr., Cleveland Heights, Ohio, assignor to Aquatech Inc.

Original No. 3,570,526, dated Mar. 16, 1971, Ser. No. 752,662, Aug. 14, 1968. Application for reissue Aug. 23, 1971, Ser. No. 174,282

Int. Cl. F16k *49/00*

U.S. Cl. 137—340 **14 Claims**



In a mobile unit which includes a water reservoir; water-handling components including a hose reel and hose normally coiled thereon, pump means suitably connected between the reservoir and the hose to pump from the reservoir through the hose, valve means to control the flow of water; an internal combustion engine utilized to drive the pump means and a source of heat; the improvement for use with severe winter freezing conditions comprising a shroud assembly which in combination with a wall of the reservoir encloses the water-handling components and source of heat on all four sides and the top, the source of heat being arranged to circulate a flow of warm air within the space enclosed by the shroud in a continuous flow path against the wall of the reservoir and across and around the water-handling components to maintain all of such components and water in the reservoir above the freezing temperature of water.

27,875

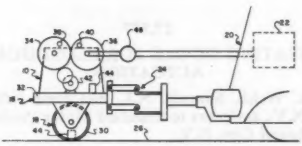
METHOD AND APPARATUS FOR DETERMINING DEFLECTION OF A STRUCTURE

Gilbert Swift, Rte. 3, Box 266A, Bryan, Tex. 77801

Original No. 3,481,183, dated Dec. 2, 1969, Ser. No. 760,125, Sept. 12, 1968, which is a continuation-in-part of Ser. No. 192,475, May 4, 1962, now Patent No. 3,341,706, and a continuation of abandoned Ser. No. 386,342, July 30, 1964. Application for reissue Nov. 30, 1971, Ser. No. 203,490

Int. Cl. G01m *7/00;* **G01n** *29/00*

U.S. Cl. 73—67.1 **16 Claims**



A pair of counter - rotating masses are rotated synchronously in a vertical plane, the masses being arranged with respect to a mechanical coupling means which may be formed of a single wheel trailer so as to produce a cyclic variation of the downward force exerted by the wheel of the trailer on the surface of the structure being tested. The trailer is designed with respect to the force generated by the rotatable masses such that there will always be a downward force acting against the surface, avoiding any negative force during the entire cycle of the rotating masses. Motion sensing devices are provided to determine the amplitude of the vertical oscillatory motion and/or the phase angle of the motion with respect to the driving force of the rotating masses.

27,876

DISPENSING APPARATUS

Fredrick W. Hudson, West Henrietta, and William C. Emerson, Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

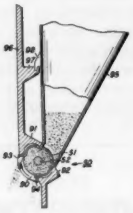
Original No. 3,596,807, dated Aug. 3, 1971, Ser. No. 796,964, Feb. 6, 1969. Application for reissue Aug. 25, 1972, Ser. No. 283,882

Int. Cl. G01f *11/20*

U.S. Cl. 222—181 **6 Claims**

A disposal-dispensing unit for dispensing particulate material in which a substantially enclosed container having

an opening in the bottom thereof is sealed by a resilient open-celled elastomeric roll which is rotatably supported in biasing contact with the walls of said opening to retain particulate material therein. Further means are provided exterior the container for rotating the roll sequentially



through the toner material in the container wherein the open-celled cavities on the roll surface are uniformly loaded with particulate material, and then past at least one biasing wall where the roll surface is deformed sufficiently to force the particulate material from the roll surface into the dispensing opening.

27,877

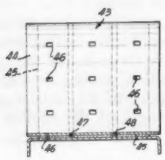
HEATING DEVICE FOR ELECTRICAL ACTUATION

James W. Welsh, Summit, N.J., and Fred Adler, Westbury, N.Y., assignors to Standard Motor Products, Inc., Long Island City, N.Y.

Original No. 3,657,518, dated Apr. 18, 1972, Ser. No. 28,326, Apr. 14, 1970. Application for reissue Oct. 2, 1972, Ser. No. 293,805

Int. Cl. H05b *3/06*

U.S. Cl. 219—536 **17 Claims**



A heating device for electrical actuation is shown which includes an elongated convoluted support and an insulated electrical resistance wire disposed upon the support. A base member optionally underlies the support and is secured thereto. The support may be formed alternatively of a pair of superimposed members, a lateral inturned portion, or a pair of spaced lateral inturned portions or folded portions. Flange portions may also be optionally provided upon the base member for stiffening purposes.

27,878

PROCESS

Gary L. Sommars, 63 Brittain Road, Akron, Ohio 44305, and Adel F. Halasa, 5040 Everett Road, P.O. Box 244, Bath, Ohio 44210

No Drawing. Original No. 3,692,883, dated Sept. 19, 1972, Ser. No. 150,837, June 7, 1971, which is a continuation-in-part of Ser. No. 854,267, Aug. 29, 1969. Application for reissue Dec. 13, 1972, Ser. No. 314,875

Int. Cl. C08d *3/04, 3/06*

U.S. Cl. 260—94.2 T **13 Claims**

Conjugated dienes are polymerized by a new catalyst system which permits control of the molecular weight and gives a more easily processed product. This catalyst system comprises (1) a sodium hydrocarbon compound having 1–10 carbon atoms in which the hydrocarbon portion is a primary, secondary or tertiary alkyl or an aryl radical, and (2) potassium hydroxide or preferably lithium hydroxide. The diene polymers produced by this process have controllable molecular weights in the range of 5,000 to 1,000,000, preferably 100,000 to 500,000, broad molecular weight distribution, high glass transition temperatures, high degree of branching and are more easily processed in the production of rubber and other compositions for commercial use.

27,879

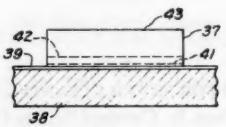
OHMIC CONTACT FOR GROUP III–V p-TYPE SEMICONDUCTORS

Neil E. Collins, Richmond Heights, and Ira E. Halt, Chesterland, Ohio, assignors to General Electric Company

Original No. 3,684,930, dated Aug. 15, 1972, Ser. No. 101,971, Dec. 28, 1970. Application for reissue Feb. 21, 1973, Ser. No. 334,237

Int. Cl. H01l *1/14*

U.S. Cl. 317—234 R **14 Claims**



A combination of gold-germanium or gold-silicon alloy and zinc or other metallic Group II element provides an electrical contact and low-temperature bonding material for p-type semiconductors of Group III–V such as gallium arsenide.

27,880

LIQUID POLYSULFIDE POLYMERIC GLASS-TO-METAL SEALANT COMPOSITION

John P. Gallagher, Forked River, N.J., Robert M. Meyers, Fairless Hills, Pa., Earl H. Song, Trenton, N.J., and Clark M. Willitts, Lewistown, Pa., assignors to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Original No. 3,697,472, dated Oct. 10, 1972, Ser. No. 76,300, Sept. 28, 1970. Application for reissue Dec. 4, 1972, Ser. No. 312,240

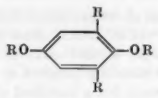
Int. Cl. C08g *51/04, 51/30, 51/60*

U.S. Cl. 260—33.8 R **11 Claims**

A liquid polysulfide polymer sealant composition for sealing glass to metal having greatly improved adhesion

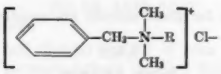
stability when exposed to ultraviolet radiation or sunlight transmitted through glass and greatly improved penetrometer cure and adhesion rate properties is obtained by use of hydroquinone and quinone ultraviolet radiation adhesion stabilizers and quaternary ammonium chloride curing and adhesion rate regulators.

Quinone and compounds having the structure

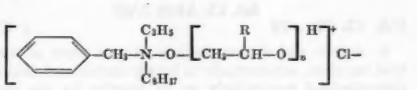


where R represents H or alkyl groups having 1–6 carbon atoms, e.g. hydroquinone and p-methoxy phenol, are effective additives for preventing loss of cohesive strength or loss of adhesion of cured polysulfide polymer compositions to glass where the sealant/glass interface is exposed to ultraviolet radiation, including sunlight. However, the addition of these adhesion stabilizers have an adverse effect on quick adhesion and curing rate of the sealant. Therefore, the addition of curing and adhesion rate regulators is required.

Improved quick adhesion and cure rate properties are obtained by the use of quaternary ammonium chlorides represented by the formula



where R represents an alkyl having 8 to 24 carbon atoms [and quaternary ammonium chlorides represented by the formula



where R' represents hydrogen or methyl and n is a number from 3 to 5].

PLANT PATENTS

GRANTED JANUARY 8, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,423

ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Dec. 27, 1971, Ser. No. 212,839

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a plant branching freely from its base, bearing very freely flowers which change from Indian Lake in the tight bud to Phlox Pink in the open flower; generally light green foliage; thorny stems; long pointed flower buds; extremely strong pleasant fragrance.

3,424

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Dec. 10, 1971, Ser. No. 206,954

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the parent cultivar Puritan by its yellow flower color; approximately one-quarter inch smaller diameter flowers; approximately one to two inches shorter plant habit; its slightly lighter foliage color and its approximately two to five days later response, with such response difference being greatest during low light periods of winter, and least during high light, high temperature periods.

3,425

CHRYSANTHEMUM PLANT

Barrie John Machin, East Broyle Estate, Chichester, England, assignor to Frampton's Nurseries Limited, Chichester, Sussex, England

Filed Dec. 27, 1971, Ser. No. 212,834

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct variety of *Chrysanthemum morifolium* Bailey, spray type, substantially as shown and described, characterized particularly as to novelty by the unique combination of a red bronze color, extreme vigor, and ability to set buds and flower uniformly in a wide range of environmental conditions.

3,426

AFRICAN VIOLET PLANT

Arnold W. Fischer, Isernhagen, Germany, assignor to Geo. J. Ball, West Chicago, Ill.

Filed Jan. 24, 1972, Ser. No. 220,508

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—69 **1 Claim**

A new variety of African violet plant distinguished by the medium to large size of its delicate pink flowers which are carried on short peduncles branching from relatively long flower stalks which tend to spread laterally above relatively large, almost circular leaves carried on long, horizontally extending petioles to provide a sharply contrasting background for a bunched mass of the flowers.

3,427

AFRICAN VIOLET PLANT

Arnold W. Fischer, Isernhagen, Germany, assignor to Geo. J. Ball, West Chicago, Ill.

Filed Jan. 24, 1972, Ser. No. 220,505

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—69 **1 Claim**

A new variety of African violet plant distinguished by its very profuse year around production of relatively large, long lasting, dark pink flowers which grow in clusters on strong upright stalks. The blossoms are medium large in size and appear massed above a flatly spreading bed of dark green leaves.

3,428

AFRICAN VIOLET PLANT

Arnold W. Fischer, Isernhagen, Germany, assignor to Geo. J. Ball, West Chicago, Ill.

Filed Jan. 24, 1972, Ser. No. 220,507

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—69 **1 Claim**

A new variety of African violet plant characterized by the delicate pink color of its very large blossoms which bloom profusely and recurrently the year around, and by its vigorous growth with abundant outwardly spreading foliage and relatively high display of closely massed flowers.

3,429

AFRICAN VIOLET PLANT

Arnold W. Fischer, Isernhagen, Germany, assignor to Geo. J. Ball, West Chicago, Ill.

Filed Jan. 24, 1972, Ser. No. 220,506

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—69 **1 Claim**

A new variety of African violet plant distinguished by its profuse, year around production of long lasting blossoms which appear on erect stalks displaying the flowers well above the plant foliage. The new plant flowers uniformly with large blossoms of a pleasing pink color.

3,430

CARNATION PLANT

Bent E. Graust, 3233 Freedom Blvd., Watsonville, Calif. 95076

Filed Mar. 6, 1972, Ser. No. 232,296

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—73 **1 Claim**

1. The new and distinct variety of carnation substantially as herein disclosed characterized as to novelty by the color of its flower.

3,431

ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Dec. 6, 1971, Ser. No. 205,421
Int. Cl. A01h 5/00
U.S. Cl. Plt.—11 1 Claim

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous, well branched plant, large dark green foliage, long pointed buds, burnt orange color opening to Chinese coral and fading lightly to a lighter carrot red.

3,432

ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Dec. 6, 1971, Ser. No. 205,422
Int. Cl. A01h 5/00
U.S. Cl. Plt.—14 1 Claim

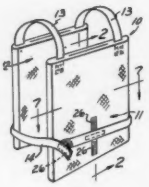
1. A new and distinct variety of rose plant of a type intermediate between hybrid tea and floribunda in bush habit, flower clustering, flower size; a prolific producer of cut flowers in the greenhouse, nearly white bud and open flowers, and a strong resistance to rose powdery mildew.

PATENTS

GRANTED JANUARY 8, 1974

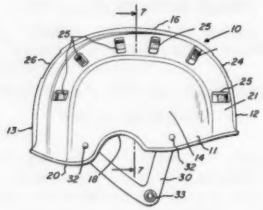
GENERAL AND MECHANICAL

3,783,449
BULLET-PROOF PROTECTIVE ARMOR AND METHOD OF MAKING SAME
Richard C. Davis, 8611 Whitehorn, Romulus, Mich.
Filed May 8, 1972, Ser. No. 251,077
Int. Cl. F41h *1/02*
U.S. Cl. 2—2.5 **4 Claims**



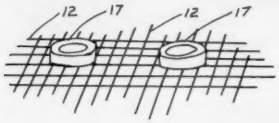
A bullet-proof armor formed of a pad made of a number of loose sheets woven of heavy gauge, linearly oriented nylon threads, the pad being enclosed within a cloth envelope, and means for holding the envelope containing the pad upon the object to be protected. The sheets are treated by subjecting them to super-cooling in a cryogenic atmosphere to thereby increase their impact resistance capabilities.

3,783,450
HOCKEY HELMET
William Raymond O'Connor, 2190 Sargent Ave., St. Paul, Minn.
Continuation of Ser. No. 216,633, Jan. 10, 1972, abandoned.
This application Feb. 5, 1973, Ser. No. 329,320
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 R **12 Claims**



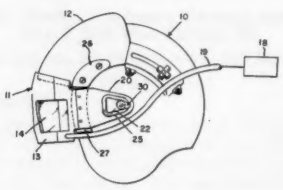
A hockey helmet is disclosed in which an outer shell is formed of lightweight material generally by injection molding with three protective ribs extending longitudinally over the top of the helmet, the two outer ribs having openings formed therein. The openings progressively decrease in area as they extend from the front to the back of the helmet. The inside of the helmet has three protective pads secured to the inside of the outer protective shell so that a pair of passages are formed in cooperation with the ribs in cooling the upper part of the head of the wearer. The central pad covers the central rib and forms an air cushion for the top of the head of the wearer.

3,783,451
INSECT PROTECTIVE GARMENT
Eugene F. Malin, 1040 Bayview Dr., Suite 201, Fort Lauderdale, Fla.
Continuation of Ser. No. 138,677, April 29, 1971, abandoned.
This application Dec. 20, 1972, Ser. No. 316,676
Int. Cl. A42b *3/00*
U.S. Cl. 2—4 **6 Claims**



An insect protective garment for use in a warm climate comprising an insect netting material coupled to skin separating members such as, circular rings or elongated rib members which hold the netting material off the users skin to prevent mosquitoes from reaching or making contact with the skin of the wearer. Insects adjacent the net area are unable to reach the skin, while the garment provides sufficient air flow through the net and about the wearer's skin.

3,783,452
REMOVABLE GOGGLES FOR HELMET
Alden P. Benson; Kenneth J. Foster, both of Dedham, and Alfred R. Quellette, Saugus, all of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 11, 1972, Ser. No. 242,999
Int. Cl. A42b *3/00*
U.S. Cl. 2—6 **3 Claims**

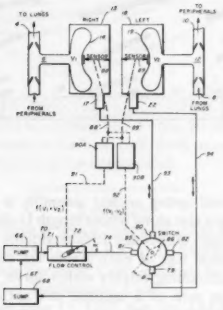


Apparatus for attaching removable photochromic goggles to a conventional crash helmet includes a post on one side of the helmet adjacent the face opening thereof and an over-center latch on the other side of the helmet which engage apexes of triangular eyelets formed in straps extending from the distal ends of the goggles. The over-center latch has a lever with a camming surface formed thereon, notched to retain the apex of one of the eyelets and pivoted such that upon turning of the lever aftwards the notch is moved aftwards, stretching the straps, within side brackets formed on the helmet for vertically locating the goggles in front of the wearer's eyes.

3,783,453
SELF-REGULATING ARTIFICIAL HEART

Victor W. Bolie, 7504 American Heritage Dr., Albuquerque, N. Mex.

Filed Dec. 23, 1971, Ser. No. 211,485
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 17 Claims



This invention describes a complete artificial heart system which is capable of providing complete self-regulative control of the pumping action of the heart. It comprises a right and left ventricular bladder connected to the blood system. These bladders are housed in right and left ventricular chambers, the space between the bladder and the chamber being filled with a drive fluid. Means are provided for sensing the volume of blood in the right and the left ventricular bladders.

There is a power fluid system which comprises a sump maintained at atmospheric pressure, a pump, a flow control means and a switching means. The right and left sensors in the corresponding right and left ventricular chambers have outputs which are functions of the blood volume in the right and left ventricular bladders. A control means takes these sensor outputs and computes two control signals, one of which is a function of the difference between the volumes in the right and the left ventricular bladders, and the other is a function of the sum of the volumes in the right and the left ventricular bladders. The sum function goes to control the rate of flow of the power fluid and the difference function goes to control the switching.

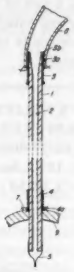
The switching means is provided so that when one bladder, for example the right ventricular bladder, becomes fully extended the left ventricular bladder becomes fully compressed, whereupon the drive fluid is switched into the right ventricular chamber to compress the bladder and push its contained blood out into the body system; at the same time, the power fluid that was filling the left chamber is released to flow back to the sump.

3,783,454
SURGICALLY IMPLANTABLE PROSTHETIC DUCT FOR THE REMOVAL OF BIOLOGICAL LIQUIDS

Andre Sausse, Hauts-de-Seine, and Andre Stern, Paris, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Mar. 29, 1972, Ser. No. 239,218
Claims priority, application France, Apr. 7, 1971, 7112306
Int. Cl. A61f *1/24*; A61m *27/00*
U.S. Cl. 3—1 11 Claims

A duct for the removal of biological liquids, especially urine, in the form of a tubular body having internal and external surfaces, at least, of silicone elastomer. Near its upper end, e.g., for connection to a ureter, the body is surrounded by a woven or knitted textile sheath, which is secured by silicone elastomer adhesive to the body and is used as a suturing

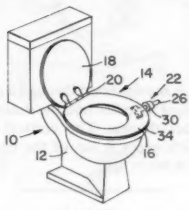


member for securing the duct to the ureter. Near its lower end the body is provided with a similar sheath or a radially outwardly projecting flange to secure it, e.g., to a bladder.

3,783,455
TOILET OPERATING ASSEMBLY

William R. Vanderbrook, 623 Sunny Side Dr., Cadillac, Mich.

Filed July 20, 1972, Ser. No. 273,351
Int. Cl. A47k *17/00*; E03d *11/00*
U.S. Cl. 4—1 5 Claims

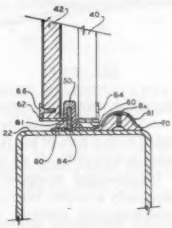


A toilet operating assembly for protecting the hands of a user of a toilet against germs, the operating assembly being adapted to attach to a toilet seat and to include a partially housed vapor emitting, wick, separating an operating handle and the toilet seat.

3,783,456
BATHING FACILITY

Troy L. Doan, 2090 Alta Vista Dr., Vista, Calif.

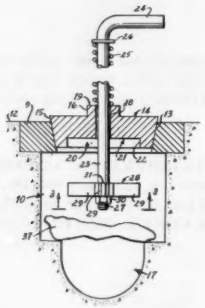
Filed Feb. 14, 1972, Ser. No. 226,135
Int. Cl. A47k *3/14*, *3/22*
U.S. Cl. 4—149 9 Claims



The outer side rim of a tub or a shower has a rib along the outer, upper margin forming an abutment and water seal for a

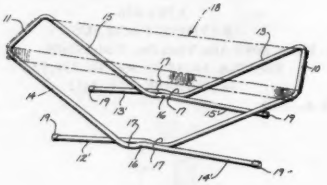
closure such as a weighted curtain or sliding shower doors. In the case of sliding shower doors, further guidance for the doors is provided by an upstanding abutment interposed between the doors and by a pair of U-shaped guide members, each attached to one door and extending under the other door to guidingly bear on the opposite side of the other door. The rim is sloped to drain inwardly.

3,783,457
DRAIN CLEANER
Salvatore J. Tornabene, 164-30 90th St., Howard Beach, N.Y.
Filed June 20, 1972, Ser. No. 264,557
Int. Cl. E03d *11/00*
U.S. Cl. 4—255 **5 Claims**



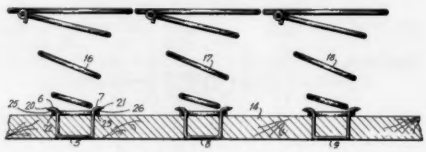
A vertical shaft is manipulated through a drain trap cover so as to lower a cleaning member into the drain trap and dislodge clogging substances therein. The vertical shaft is provided with a spring which urges it out of the drain trap when the cleaning member is not in use.

3,783,458
HAMMOCK BED-SUPPORTING FRAMES
James L. Westrich, Algoma, Wis., assignor to Gleason Corporation, Milwaukee, Wis.
Filed Apr. 3, 1972, Ser. No. 240,489
Int. Cl. A47k *11/02*
U.S. Cl. 5—129 **3 Claims**



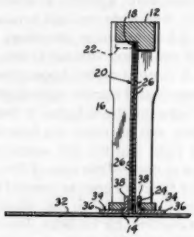
A hammock-supporting stand or frame, formed of metal tubing or the like and designed particularly for lounge-type hammocks, is provided with a pair of leg portions on each side thereof which extend downwardly at an angle to a point adjacent the stand longitudinal midpoint and are thence deflected to a substantially straight, horizontal position forming elongated ground-engaging portions, the horizontal portions of said legs on each side of the stand being pivotally joined to permit said stand to be jackknifed to a folded, space-conserving compact condition for convenient shipping, storage, or display.

3,783,459
COIL SPRING ANCHOR ASSEMBLY
James Piliero, 30-83 37th St., Astoria, N.Y.
Filed Dec. 11, 1972, Ser. No. 313,804
Int. Cl. A47c *23/02*
U.S. Cl. 5—259 B **5 Claims**



A prefabricated spring anchor assembly is disclosed comprising a furniture slat along whose length U-shaped anchoring staples are partially embedded at substantially equal intervals. Protruding vertical legs of each staple are curved to form a pair of spring clenching fingers which serve, in cooperation with the bottom turn of a tapered coil spring, to lock the spring to the top surface of the slat.

3,783,460
HONEYCOMB FOUNDATION INSTALLING DEVICE
Thurman E. Goff, 2216 N.W. 38, Oklahoma City, Okla.
Filed Oct. 2, 1972, Ser. No. 294,404
Int. Cl. A01k *47/02*
U.S. Cl. 6—10 **2 Claims**

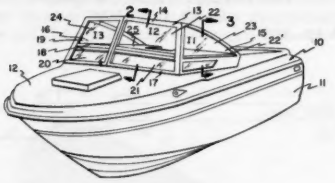


A pair of upstanding guides, secured in parallel spaced-apart relation to a horizontal base, are interposed between horizontal side members forming a honeycomb frame bottom rail for forcing the side members apart and loosely disposing a longitudinal edge portion of a honeycomb foundation therebetween.

3,783,461
PLEASURE BOAT CONSTRUCTION
Dave Charles Sugden, 2935 W. 3590 South, Salt Lake City, Utah
Filed Oct. 2, 1972, Ser. No. 294,439
Int. Cl. B63c
U.S. Cl. 9—1 R **4 Claims**

An improved boat construction wherein the front and side windshield structure provides light for both a lower cabin area

as well as for an upper viewing area. The upper horizontal portion of a molded dash, by way of example, constitutes a partition or roof of the so-defined cabin area. By the invention the cutting of apertures in the boat hull, deck or cabin for supplying light to the boat interior are avoided.

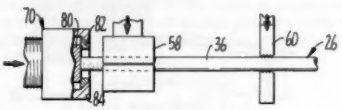


3,783,462

CONCRETE FORM SNAP-TIE ROD AND METHOD OF FORMING THE HEAD THEREFOR

William J. Steffan, Fremont, Calif., assignor to Burke Concrete Accessories, Inc., Burlingame, Calif.

Filed June 17, 1971, Ser. No. 153,979
Int. Cl. B21k *1/46*
U.S. Cl. 10—27 H **3 Claims**



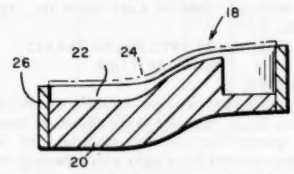
A snap-tie rod having a hot-upset end with other than a round periphery so that the end may be gripped with a socket-type wrench. The head of the rod is fabricated by a hot-upsetting method wherein the periphery of the head is confined within a flat-sided peripheral die during upsetting so that the periphery of the head is formed with flat sides conforming to the die.

3,783,463

MATRIX FOR SUPPORTING A UNIT SOLE FOR ROUGHING OR THE APPLICATION OF ADHESIVE

Bertram A. Von Schoppe, Marlboro, Mass., assignor to Compo Industries, Inc., Waltham, Mass.

Filed Dec. 15, 1972, Ser. No. 315,630
Int. Cl. A43d *25/00*
U.S. Cl. 12—17 R **15 Claims**



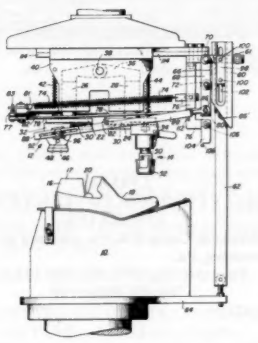
A matrix for receiving a rigid unit sole of the kind wherein there is a sharp slope and relatively large drop from heel to forepart comprising a rigid form containing a cavity of such shape and depth as to contain the unit sole with its top surface substantially flush with the top of the form, said form having a peripheral contour corresponding to that of the unit sole, a top surface corresponding to the longitudinal profile of the top surface of the sole, a height greater than the maximum thickness of the unit sole, and a bottom surface, the longitudinal profile of which is substantially parallel to the top surface. Alternatively, the bottom may be flat and provided with a peripheral flange. The matrix is employed to enable traversing the unit sole peripherally in a machine provided with cross-feed rolls for advancing the peripheral edge of the matrix against fixed guides or provided with opposed feed rolls arranged to engage the inner and outer sides of the bottom flange to advance the matrix peripherally.

3,783,464

MACHINE FOR APPLYING PRESSURE TO SHOE BOTTOMS

Leo F. Stanton, Newburyport, Mass., assignor to American Shoe Machinery Corp., Wakefield, Mass.

Filed Oct. 2, 1972, Ser. No. 294,110
Int. Cl. A43d *09/00, 89/00*
U.S. Cl. 12—142 T **13 Claims**



The spacing between the heel and toe abutting members in a sole pressing machine is adjustable automatically to enable proper spacing of the abutting members lengthwise of shoe assemblies of varying sizes. The machine includes a pad box which supports the shoe, bottom down, below the abutting members. The pad box is movable upwardly to urge the shoe against the abutting members and to apply pressure to the bottom of the shoe. Means are provided for moving the heel and toe abutting members inwardly toward each other in response to and as the pad box moves upwardly. The inward motion of the abutting members terminates when the upwardly moving shoe engages one or both of them. This locates the abutting members in proper longitudinal spacing on the shoe so that they may properly brace the shoe against the further application of increased force against the shoe bottom. The machine also includes means for disabling the automatic adjustment for spacing the abutting members to enable the spacing to be adjusted manually.

3,783,465

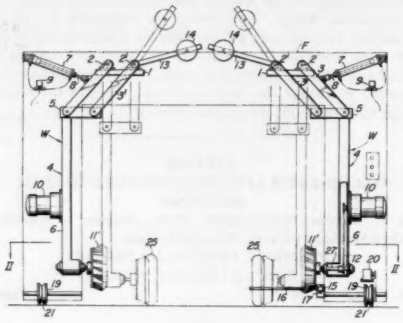
CAR WHEEL WASHING APPARATUS

Shigeo Takeuchi, Nagoya, Japan, assignor to Takeuchi Tekko Kabushiki Kaisha, Nagoya, Japan

Filed June 2, 1971, Ser. No. 149,228
Claims priority, application Japan, June 3, 1970, 45/53996
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 E **1 Claim**

A car wheel washing apparatus comprising a movable frame, a pair of rotatable washing brushes mounted movably in the direction transverse to the direction of movement of the frame, and feeler means provided adjacent to the lower end of

the movable frame for controlling the stopping of said movable frame and for controlling the transverse movement and the



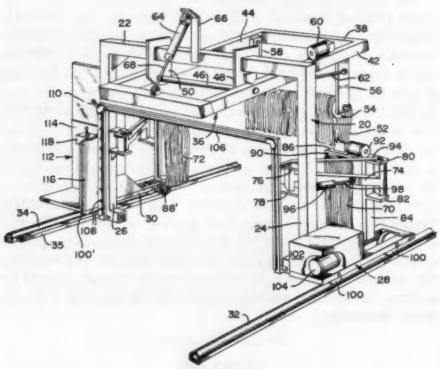
rotation of said washing brushes, said feeler means having a feeler arm adapted to contact with the outer periphery of a wheel on a car to be washed.

3,783,466

MANUALLY CONTROLLED VEHICLE WASHING APPARATUS

Donald A. Bernardi, Camp Hill, Pa., assignor to Bernardi Bros. Inc., Harrisburg, Pa.

Filed Oct. 26, 1971, Ser. No. 192,154
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 E **12 Claims**



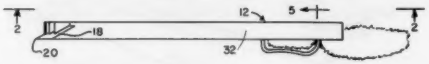
Vehicle washing apparatus including a movable frame adapted to be driven in first and second opposite directions for passing over a vehicle to be washed, a pair of side brush assemblies disposed on the frame and transversely movable relative thereto, and a unitary control assembly which is manually movable to control both the movement of the frame and the transverse position of the side brush assemblies whereby the apparatus may be inexpensively manufactured and may be operated by the manipulation of only a single control device.

3,783,467

COMBINED SCOURING DEVICE HOLDER AND SCRAPER

Harry Grossman, 5105 Ventnor Ave., Ventnor, N.J.

Filed Feb. 22, 1972, Ser. No. 228,146
Int. Cl. A47l *17/04*
U.S. Cl. 15—105 **4 Claims**



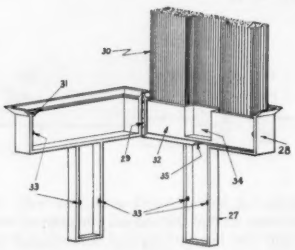
A handle member, one end of which is provided with clamping means for receiving and holding a steel wool pad for scouring pots and pans and the like. The other end of said handle member may take the form of a scraper.

3,783,468

PAINT BRUSH WITH BRISTLE CARTRIDGE

Louis Saloutos, 4002 Drexel Ave., Madison, Wis.

Filed Jan. 20, 1972, Ser. No. 219,324
Int. Cl. A46b *11/00, 3/08*
U.S. Cl. 15—202 **1 Claim**



A paint brush with a removable bristle packet. The bristle packet comprises one or more cartridges, each having a multitude of bristles permanently secured in a ferrule with an epoxy type adhesive. The bristles encircle a central void or reservoir area for holding paint. The ferrule of a single bristle cartridge may form a portion of the paint reservoir or the ferrules of two or more bristle cartridges may engage one another to form a portion of the reservoir. In addition, the bristle packet may include a bristle reservoir cartridge releaseably secured in the central reservoir area.

3,783,469

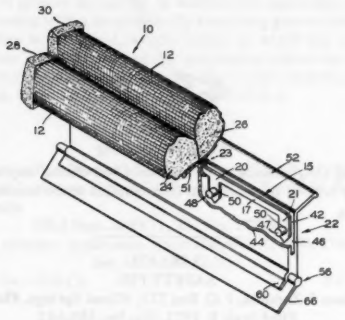
COMBINATION WINDOW WASHER, SCRAPER AND SQUEEGEE

Herbert A. Siemund, 2800 N. Lake Shore Dr., Apt. 3201, Chicago, Ill.

Filed June 20, 1972, Ser. No. 264,612
Int. Cl. A47l *1/08*
U.S. Cl. 15—209 R **8 Claims**

A cleaning implement of a type including a frame structure, a manipulating handle attached to the absorbent member of a sponge or sponge like resilient material, the absorbent member being covered by a tight encompassing reticulated netting material and mounted on the frame structure by an improved comb-like mounting member or strip. The mounting strip having prongs projecting in spaced relation along the strip. The prongs being so arranged that upon the mounting strip being positioned in a longitudinally extending parallel relation to the absorbent member with the prongs being directed into the absorbent member. The longitudinally ex-

tending strip may be thereupon forced into the resilient material of the absorbent member and covering netting material so as to form a pair of juxtaposed roll shaped portions of the absorbent member with the prongs of the mounting strip passing through a portion of the resilient material of the absorbent member intermediate the pair of roll shaped portions thereof. The prongs of the mounting strip thus projecting



through the intermediate portion of the absorbent member are in turn positioned in a channel defined by opposite plate portions of the frame structure and secured therein so as to in turn fasten the mounting strip to the frame structure, thereby effectively mount the pair of roll shaped portions of the absorbent member covered by the encompassing reticulated netting material on the frame structure.

3,783,470

CLEANER FOR TAPE CARTRIDGE PLAYERS

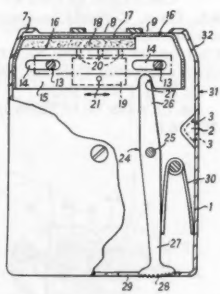
Mark Stanley Myers, Cockfosters, and Ronald Frederick Bishop, Brookmans Park, both of England, assignors to Metrosound Manufacturing Company Limited, Waltham Abbey, Essex, England

Filed Nov. 26, 1971, Ser. No. 202,514

Claims priority, application Great Britain, May 18, 1971, 15,458/71

Int. Cl. G11b *5/00*

U.S. Cl. 15—210 R **4 Claims**



The invention provides a device, for cleaning tape-coacting operative portions of a magnetic tape cartridge player of that kind which includes at least a cartridge-receiving passage in which said operative portions are disposed and which may further include means for retaining a cartridge in fully inserted position in said cartridge-receiving passage, said device comprising a body adapted for insertion into said cartridge-receiving passage of said player, said body having cleaning means disposed adjacent to an end thereof such that when the body is inserted in said cartridge-receiving passage with said cleaning means at the leading end of said body said cleaning means become positioned for and can pass into abutment with said operative portions of said player, said cleaning means being movable past said operative portions so as to exert a wiping action thereon.

3,783,471

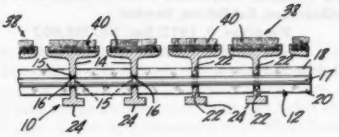
FOOT GRILLES AND MATS

Frank L. McGeary, Scotch Plains, and Patrick L. Zampetti, Cranford, both of N.J., assignors to Construction Specialties, Inc., Cranford, N.J.

Filed Nov. 19, 1971, Ser. No. 200,372

Int. Cl. A47l *23/22*; **E04f** *19/10*

U.S. Cl. 15—215 **10 Claims**



A foot grille, grating, mat, or the like comprises parallel, closely spaced bars, each of which has a shallow channel that has overhanging lips and receives and captures a replaceable carpet strip. Each carpet strip has a semi-rigid backing that imparts sufficient stiffness to the carpet to prevent it from pulling out of the bar channel.

3,783,472

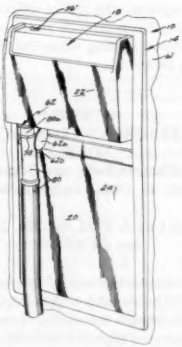
WALL MOUNTED VACUUM CLEANER UNIT AND METHOD OF INSTALLATION

Jacob C. Mol, Grand Rapids, Mich., assignor to Wal Vac, Inc., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 37,211, May 14, 1970, abandoned. This application Jan. 14, 1972, Ser. No. 217,890

Int. Cl. A47l *5/38*

U.S. Cl. 15—314 **20 Claims**



A wall mounted vacuum cleaner unit being substantially a four piece assembly and consisting of a main support frame with an integral lower rearwardly projecting cover shell having a front opening defining a receptacle compartment, upper

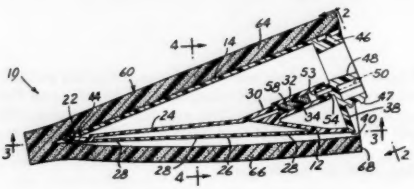
front and rear cover shells in opposite and opposed relation releasably secured to the main support frame defining a power compartment and a front access door for the receptacle compartment front opening. The front cover shell of the power compartment is characterized by being outwardly protruding from the main support frame and having a downwardly oriented bottom surface within which there is provided a vacuum hose receptacle. Conduit means are provided to be communicant with the receptacle compartment and with the downwardly disposed hose receptacle.

A mounting frame to which is mounted the main support frame, after the former is initially installed in an opening provided in the wall, is provided to be adjustably installed to compensate for wall thickness and insure flush engagement of the main support frame relative to the wall surface upon final installation.

3,783,473
WASHING DEVICE

Jan-Eric Engquist, Eskilstuna, Sweden, assignor to Forenade Fabriksverken, Eskilstuna, Sweden

Filed Nov. 9, 1972, Ser. No. 305,002
Int. Cl. A47l 7/00
U.S. Cl. 15—322 **11 Claims**



A washing device for cleaning surfaces such as human skin and the like hygienically which includes an upper shell portion and a lower plate portion having discharge and suction return openings therein adapted for connection, respectively, to a source of washing foam and a source of vacuum. A porous cover element is received over the shell and the lower plate and underlies the discharge and suction return openings in a manner to effect passage of the washing foam through the porous cover onto the surface being cleaned when the device is pressed thereagainst, the cover effecting passage of the discharged washing foam directly to the suction return opening so as to prevent dripping when the device is raised from the surface being cleaned.

3,783,474
SHAG RUG ATTACHMENT FOR SUCTION CLEANER NOZZLE

Max L. Fairaizl, Chagrin Falls, and Eugene F. Martinec, East Cleveland, both of Ohio, assignors to Health-Mor Inc., Chicago, Ill.

Filed July 3, 1972, Ser. No. 268,860
Int. Cl. A47l 9/06
U.S. Cl. 15—369 **7 Claims**

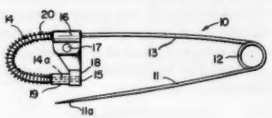
A skid is attached to the nozzle of a suction cleaner, permanently or detachably and adjustably, and has a pair of spaced sled-like runners extending laterally of the nozzle opening and connected together laterally in spaced relation. A rake is mounted for limited pivotal movement at either or both of the front and rear ends of the skid. Each rake has spaced straight tines, points or teeth. The skid determines the height of the nozzle above the backing and shag strands of a shag rug during cleaning. Pivotal movement of any rake is controlled so that the rake points extend upright on either the back or the front stroke of the nozzle, and so that the rake pivots away from a rug on the nozzle stroke across a rug reverse from that during which the points are maintained upright. This enables

the rug shag strands to be rake-combed during any selected one or both of the back and front strokes of the nozzle across the rug.

3,783,475
SAFETY PIN

Rodvinon I. Zamotin, P.O. Box 721, Miami Springs, Fla.

Filed Sept. 1, 1972, Ser. No. 285,642
Int. Cl. A44b 9/10
U.S. Cl. 24—158 S **5 Claims**

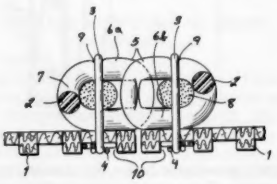


A safety pin in which the back and front legs are resiliently biassed apart. The back leg extends to form one arm of a U-shaped end loop, the other arm of which has a guide slot associated therewith to receive the pointed end of the front leg. A band on the end loop is movable to an end position at which it encircles the pin point in the closed position thereof, and including a coil spring on the end loop resiliently urging the band to the said end position.

3,783,476
SLIDE FASTENER STRINGER WITH STITCHED COUPLING ELEMENT

Alfons Frohlich, Essen, Germany, assignor to Opti-Holding AG, Glarus, Switzerland

Filed Feb. 18, 1972, Ser. No. 227,485
Claims priority, application Germany, Oct. 13, 1971, P 21 51 001.0; Oct. 13, 1971, P 21 51 002.1
Int. Cl. A44b 19/10; D05b 3/12
U.S. Cl. 24—205.16 C **6 Claims**



A slide-fastener stringer has its turns (of continuous coil or meander coupling element) secured to its fabric support tapes

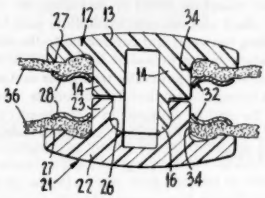
by means of single-needle or double-needle double chainstitch or lockstitch wherein bights of the needle thread straddle the coil turns and pass through the filler cords. The U-shaped bights of the needle-thread loops of each stringer half snugly embrace the individual turns and this thread is so tensioned that the looper or gripper thread lies completely along the opposite face of the support tape. The support tape is formed parallel to at least one of its longitudinal edges with a longitudinally extending valley or channel in which the looper, locking or gripper thread lies. In addition the upper side of the coil is formed with a longitudinally extending groove (formed by notches in the shanks of the turns) in which the needle thread lies. After stitching of the interleaved coils to the tapes the thermoplastic monofilament needle thread which has been stretched, is heated to thermally fix and shrink it.

3,783,477

SNAP FASTENER

Ross Lynton Hamilton, 12 Bhenheim Ave., Glen Waverly, and Wilfred Laurence Hallam, 4 Garden Rd., Burwood, both of Australia

Filed Sept. 8, 1971, Ser. No. 178,568
Claims priority, application Australia, Oct. 7, 1970, 2781/70
Int. Cl. A44b *17/00*
U.S. Cl. 24—213 CS **6 Claims**



The invention comprises a single or two piece snap fastener comprising a head and depending shank arranged to snap engage with a second part. A washer having a bore slightly less than the diameter of the shank is mounted on the shank. The washer has the inner-edge portion thereof directed away from the head so that the edge bites into the shank and firmly resists forces tending to move the washer along the shank away from the head.

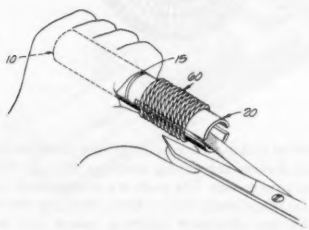
The fastener is fixed onto clothing, fabric or other material by clamping the material between the washer and the head of the fastener.

3,783,478

HAND TOOL FOR USE IN MAKING TUFTED YARD GOODS

Florence Osterhout, 10935 Bonavista Ln., Whittier, Calif.

Filed Apr. 26, 1972, Ser. No. 247,735
Int. Cl. D04d *7/06*; **A41h** *43/00*
U.S. Cl. 28—2 **2 Claims**



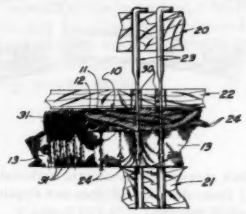
A hand tool is positionally arranged with a slotted gauge for use in making tufts of material.

3,783,479

METHOD OF PREPARING A NONWOVEN FABRIC

Claude E. Terry, Rockmart, Ga., assignor to Southern Mills, Inc., Atlanta, Ga.

Filed Aug. 27, 1970, Ser. No. 67,595
Int. Cl. B32b *5/06*; **D04h** *13/00*
U.S. Cl. 28—72.2 R **4 Claims**



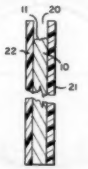
A method of preparing a nonwoven fabric from a plurality of randomly disposed and interlaced sections of yarn or the like comprising mechanically entangling fibers from a first section of yarn within a second section of yarn below the first section of yarn. If a backing material is used, fibers from yarn are entangled within the backing to secure the backing to the nonwoven fabric. At least a portion of the sections of yarn is disposed angularly with respect to the remaining sections of yarn.

3,783,480

METHOD OF MAKING A CAPACITOR

James M. Booe, Indianapolis, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Mar. 9, 1972, Ser. No. 233,252
Int. Cl. H01g *13/06*
U.S. Cl. 29—25.42 **21 Claims**



Improved capacitors employing metal foil electrodes having polymeric dielectric coatings thereon are described for use at operating voltages up to moderately high values such as 1,000–2,000V of either AC or DC. A bonding agent is used to bond together adjacent dielectric coatings, and an edge clearing technique is used to recess the edge of alternate electrodes on each side of the device.

3,783,481

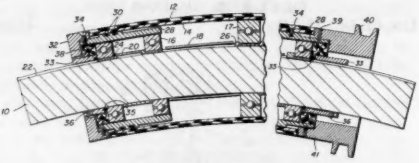
CURVED ROLL

James O. Gallant, Rehoboth, Mass., assignor to Mount Hope Machinery Company, Taunton, Mass.

Filed Nov. 25, 1970, Ser. No. 92,657
Int. Cl. B21b *13/02*
U.S. Cl. 29—116 AD **12 Claims**

A longitudinally-curved roll has a rotating surface sleeve which extends over the full face length of the roll without support apart from a series of spaced bearings mounted on a curved axle. The sleeve is formed of reinforced resin, and has the configuration of a circular cylindrical tube. It is rotatably mounted by the series of bearings, and is deflected thereby

within its elastic limit into the longitudinally-curved form of a toroidal segment. This form remains stable as the sleeve



rotates. A surface sleeve of elastomeric material can be fitted snugly over the resin sleeve, and does not require reinforcing cords if it is bonded thereto.

3,783,482

METHOD OF FILLING ANTIFRICTION BEARINGS

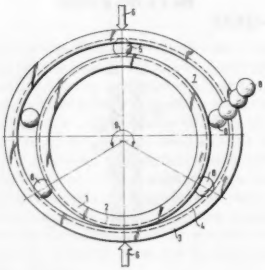
Karlheinz Kunert, and Herbert Kozalla, both of Schweinfurt, Germany, assignors to Kugelfischer Georg Schafer & Co., Schweinfurt, Germany

Filed Jan. 20, 1972, Ser. No. 219,295

Claims priority, application Germany, Jan. 28, 1971, 2104063

Int. Cl. B23p *11/00*

U.S. Cl. 29—148.4 A **2 Claims**



A method is disclosed for introducing rolling elements between the inner and outer rings of an antifriction bearing, each of which is provided with two uninterrupted shoulders, wherein the inner and outer rings are shifted to a relative eccentricity and at least one rolling element is introduced between the two rings at the widest place in the center of the crescent-shaped gap, whereupon the rings are re-shifted into a position concentric with respect to each other and then the outer ring is elastically compressed by two oppositely directed forces to form an ellipse said forces being applied to said outer ring in the region of the rolling element which has been introduced and in the region diametrically opposite the region of the rolling element, and the elastic deformation being effected until the shoulders of the two rings are at such a distance apart in the two regions of the small radii of curvature of said ellipse as to permit the introduction of the remaining rolling elements which are then introduced.

3,783,483

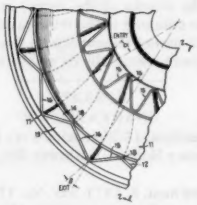
METHOD OF MAKING A FLUID COUPLING MEMBER

John Saxon Ivey, Hitchin, England, assignor to Borg-Warner Limited, Letchworth, Hertfordshire, England

Division of Ser. No. 73,526, Sept. 18, 1970, Pat. No. 3,709,635. This application Sept. 11, 1972, Ser. No. 287,959

Int. Cl. B21k *3/04*; **B23p** *15/02*, *15/04*

U.S. Cl. 29—156.8 FC **10 Claims**



A hydraulic coupling member including an outer hollow part-toroidal shell and an internal hollow part-toroidal core ring and blading between and connected to the shell and core ring, the blading being provided by an undulating element with the undulations of generally triangular section providing back-to-back triangular section flow channels. The undulating element can be cast or stamped in a single piece, or formed segmentally and secured together, and then connected to the shell and core ring.

3,783,484

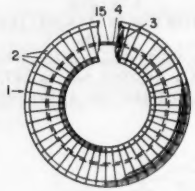
METHOD OF MAKING BUILT-UP TIRE WITH BUTT WELDED INTERNAL BAND IRON

Frederick D. Estabrook, Lookout Mountain, Tenn., assignor to Mitchell Industrial Tire Co., Inc., Chattanooga, Tenn.

Continuation-in-part of Ser. No. 860,359, Sept. 23, 1969. This application Nov. 4, 1971, Ser. No. 195,683

Int. Cl. B21h *1/10*; **B21k** *1/38*

U.S. Cl. 29—159.1 **1 Claim**



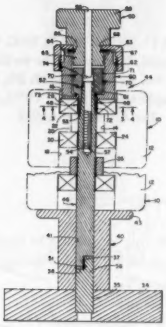
The method of making a tire built up from many radial compressible pads having registering openings through which an internal band iron passes. The pads are compressed together into a toroidal shape under heavy force, bringing the ends of the band iron into abutment within a spacer and must be aligned with great accuracy for welding in order to accomplish maximum strength of the finished product. Instead of a lap joint as heretofore used, the ends are butt welded together.

3,783,485

DEVICE FOR EXTRACTING AND FOR INSERTING BEARINGS IN A ROLLER SKATE WHEEL

Gaetano Nastasi, 1251 Ash Ave., Bensenville, Ill.

Filed July 19, 1972, Ser. No. 273,160
Int. Cl. B23p *19/04*
U.S. Cl. 29—201 **9 Claims**



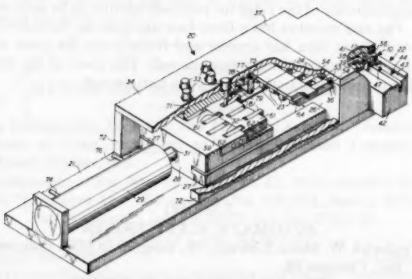
A device for extracting the bearings from a precision roller skate wheel comprising means for gripping the bearing while in the skate wheel and applying a pressure against the wheel to move the skate wheel axially with respect to the stationarily gripped bearing to thereby move said wheel away from the bearing and extract the bearing from the skate wheel. Said device also has means which insets the bearings in the skate wheel.

3,783,486

TERMINAL EJECTOR DEVICE

Harry M. Wagner, Jr., Timonium, Md., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,690
Int. Cl. H05k *13/00*; **B23p** *19/04*
U.S. Cl. 29—203 P **11 Claims**



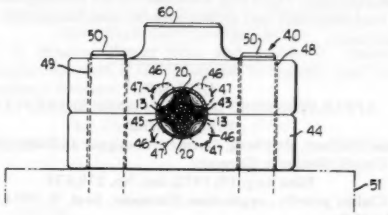
A device for ejecting snap-in terminals from a connecting block releaseably positioned within the device includes a plurality of plungers which are reciprocably movable relative to the terminals. A slide is reciprocably movable relative to the plungers by an air cylinder or other source of motive power and has a plurality of pawls mounted thereon for engaging the plungers. A keyboard is used to preset individual ones of the pawls for engaging associated plungers, then the air cylinder is actuated to advance the slide and pawls so that the preset pawls drive the plungers forward to engage and eject the terminals. Upon reversal of the operation of the air cylinder, the slide, the pawls, and the plungers are returned to their initial positions. The connecting block is released by and removed from the terminal ejector device upon the insertion of another connecting block into the device.

3,783,487

CABLE SPLICE APPARATUS

Francis A. May, Pittsburgh, Pa., assignor to Consolidation Coal Company, Pittsburgh, Pa.

Division of Ser. No. 179,445, Sept. 10, 1971. This application Sept. 18, 1972, Ser. No. 289,603
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 D **3 Claims**



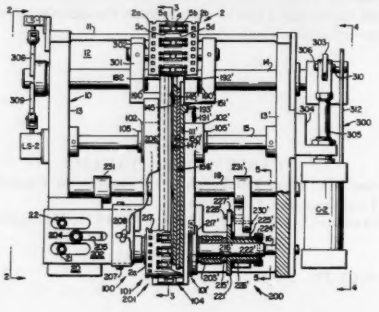
An improved cable splice joining a pair of cables and a cable splicing tool for forming that splice. The cable splice includes a pair of overlapping cable end portions held together in a common copper sleeve. The sleeve is crimped into compressing contact with the overlapping cable end portions and includes a plurality of crimping indentations formed in a circle around the periphery thereof whereby the cable splice has a tensile strength up to the maximum safe tension of the cables being spliced. A cable splicing tool for crimping the copper sleeve having overlapping cable portions therein comprises a pair of opposed die housings adapted to be fitted together in abutting contact for forming a channel-shaped crimping die for receiving said overlapping cable end portions in a copper sleeve. Each die housing includes a semicircular die extending longitudinally thereof and each die includes pendent means projecting radially inwardly thereof whereby fitting said die housing together in abutting contact may compress said pendent means into said sleeve and overlapping cable end portions for forming a crimped cable splice having desired tensile strength. Thereafter, plastic tape, rubber putty and neoprene filler material may be placed around the splice and held there with a suitable insulating tape for sealing and insulating the spliced cables.

3,783,488

FILM MOUNTED ELECTRONIC COMPONENT INSERTION MACHINE

Phillip A. Ragard, Binghamton, and Jim Paton, Johnson City, both of N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed July 5, 1972, Ser. No. 269,168
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 B **21 Claims**



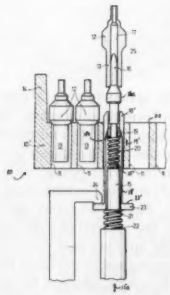
An apparatus for severing electronic components from a film strip upon which they are mounted; for bending the leads of the component; and for inserting the components into a circuit board.

3,783,489

APPARATUS FOR FIRING CERAMIC SPARKPLUG INSULATORS

Josef Duffner, Bamberg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 10, 1972, Ser. No. 279,634
Claims priority, application Germany, Sept. 9, 1971, P 21 45 057.7
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 P **11 Claims**



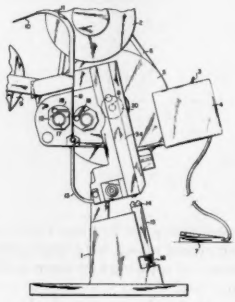
Apparatus for firing sparkplug insulators comprises a jig having an apertured bottom wall. A pin having a free end and a collar situated adjacent the latter is arranged to move vertically from below the bottom wall through a respective aperture therein. A sleeve slidably mounted on the pin is introduced into the aperture to be expanded therein in response to a further upward movement of the pin beyond the point at which a stop prevents the sleeve from moving upwardly, and thus to center the pin in respect to the aperture. The free end of the pin engages the central hole of an insulator, the extent of penetration into the latter being limited by the collar and the pin with the thus centered insulator is then moved downwardly so as to introduce the insulator into the aperture, while the collar prevents the sleeve from enclosing the free end of the pin.

3,783,490

APPARATUS FOR SPLICING WIRES

Jack Garfinkel, Bayside, N.Y., assignor to Genstape, Inc.

Division of Ser. No. 21,363, March 20, 1970, Pat. No. 3,685,148. This application June 1, 1972, Ser. No. 258,809
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 D **5 Claims**



An apparatus is provided for splicing wires, which apparatus includes shaping means for shaping a blank strip material into an approximate U-shape, and die means including a bottom wall and two side walls. The walls define a die cavity having an open side spacedly opposite the bottom wall between the side walls. The bottom wall has an elongated ridge spacedly intermediate the side walls and two concavely arcuate face portions whose axes of curvature are parallel to the ridge and which connect the same to the side walls. The apparatus also includes a ram member, moving means for moving the ram member inward of the cavity through the open side toward the bottom wall, and means for placing the shaped blank in the path of movement of the ram member for insertion of the blank into the cavity by the ram member and crimping of the blank by sliding contact with the side walls. The cavity is open longitudinally of the ridge for insertion of wires to be spliced.

The ram member has a front face opposite the bottom wall, which front face has a crest and flares from the crest in a direction away from the bottom wall. The crest of the front face is transverse to the ridge of the bottom wall.

3,783,491

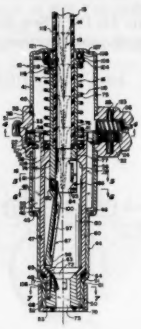
AUTOMATIC SCREW DRIVER

Frederick W. Meitz, Chicago, Ill., assignor to MSL Industries, Inc., Chicago, Ill.

Filed Apr. 7, 1972, Ser. No. 241,922
Int. Cl. B23q *7/10;* **B23p** *19/04*
U.S. Cl. 29—212 R **19 Claims**

A portable powered screw driver handling individual screws that have slotted and recessed heads. The screws are fed axi-

ally through the driver between non-rotating normally spread jaws which close behind the screw to form a screw driver bit



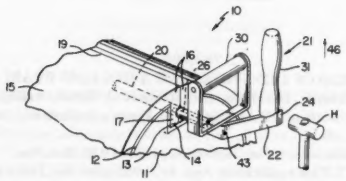
that engages the head of the screw and advances it through a wrenching surface which rotates the bit to drive the screw into a work piece.

3,783,492

TOOL FOR INSTALLING LOCKING PIN USED TO HOLD A DIEcCUTTING MAT ON A ROTARY ANVIL

John C. Duckett, Clyde; Ivan Gaster, Waynesville, and Rufus Neal Ensley, Clyde, all of N.C., assignors to Dayco Corporation, Dayton, Ohio

Filed Apr. 13, 1972, Ser. No. 243,725
Int. Cl. B25b *27/02*
U.S. Cl. 29—278 **9 Claims**



An improved tool for installing and removing an elongated wedge which has a longitudinal opening therein between locking flanges of a die-cutting mat to thereby urge the flanges tightly against holding surfaces provided on an associated rotary anvil supporting the mat to tighten and lock such mat against the anvil.

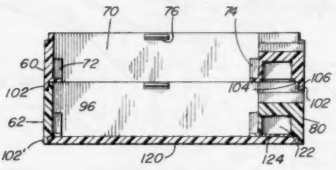
3,783,493

METHOD FOR DISPENSING RAZOR BLADE CARTRIDGES

Jan Dawidowicz, Fairfield, and Frank A. Ferraro, Trumbull, both of Conn., assignors to Warner-Lambert Company, Morris Plaines, N.J.

Continuation of Ser. Nos. 191,665, Oct. 22, 1971, and Ser. No. 236,723, March 21, 1972, and Ser. No. 258,682, June 1, 1972. This application July 10, 1972, Ser. No. 270,138
Int. Cl. B23p *17/00;* **B23q** *7/10*
U.S. Cl. 29—400 **4 Claims**

The specific embodiments provide a method for dispensing a plurality of razor blade cartridges comprising at least one dispenser having a longitudinal row of transverse cartridge chambers. Means are provided in each one of the chambers for releasably maintaining a razor blade cartridge therein with engageable surfaces of the cartridge positioned for engagement by supporting surfaces on a holder. Guide means are formed in a side wall of the dispenser unit to one side of each of the chambers for guiding the supporting surfaces of the holder into or out of engagement with the engageable surfaces of the cartridge. One of the cartridge chambers is empty, and the next successive chambers have unused cartridges therein.



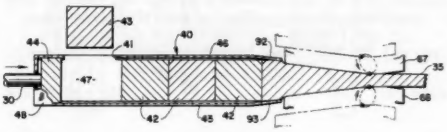
When an initial cartridge on the holder is no longer suitable for use, it is placed in the empty chamber, and the unused cartridge in the next successive chamber is used. Thereafter, each cartridge, when no longer suitable for use, is replaced in the chamber from which the cartridge was removed and the cartridge from the next successive chamber is removed for use until all the cartridges are successively removed from the dispenser unit.

3,783,494

METHOD OF REPETITIVELY IMPACTING SMALL PIECES OF METAL IN ORDER TO PRODUCE A DENSIFIED CONTINUOUS BODY

Mark E. Whalen, Pepper Pike, and Joseph W. Malleck, Chagrin Falls, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed July 21, 1971, Ser. No. 164,788
Int. Cl. B22f *3/24;* **B23q** *17/00*
U.S. Cl. 29—403 **27 Claims**



A method and apparatus for forming metal products from scrap or other small pieces. Pieces of scrap metal are bonded together by baling into bales of from 20 percent to 50 percent metal by volume. The bales are then heated from 1,200°F. to 2,350°F. and fed through a feed magazine into a harmonic impacting press.

Deformation of bales prior to reaching the impacting station in the harmonic press is controlled by control of the press and by peripheral confinement of the bales prior to being fed into the impacting station in the press.

There is also a disclosure of a means to fuse bales together through use of a thermal powder.

3,783,495

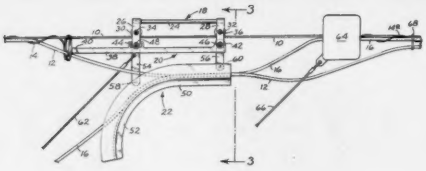
CABLE DE-LASHING TOOL

Carson E. Derrer, 6821 104th St., N.W., Gig Harbor, Wash.

Filed Dec. 4, 1972, Ser. No. 312,188
Int. Cl. B23p *19/00*
U.S. Cl. 29—426 **9 Claims**

A tool for stripping lashing wire from cable assemblies comprising a utility cable lashed to a support line comprises a trol-

ley which rides along the support line and mounts a wire stripping bar arranged for placement between the utility cable and support line in bearing engagement with the lashing wire which in a preliminary operation has been severed into



lengths. Upon moving the trolley along the support line, the bar pushes the lashing cable ahead of the trolley, forming a loose ball comprised of wire strands. At periodic intervals these are clipped and the lashing wire removed, thus freeing the cable from the support line.

3,783,496

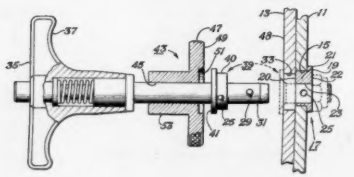
METHOD OF ASSEMBLING MEMBERS HAVING MISALIGNED HOLES

Joseph T. Siler, 1678 Columbia Dr., Mountain View, Calif.

Continuation-in-part of Ser. Nos. 785,323, Dec. 19, 1968, Pat. No. 3,590,461, and Division of Ser. No. 97,540, Dec. 14, 1970, Pat. No. 3,725,993. This application Aug. 31, 1972, Ser. No. 285,528

Int. Cl. B23q *3/00*

U.S. Cl. 29—464 **4 Claims**



Following are disclosed methods and apparatus for facilitating the alignment of the eccentric bores of "work side" and "blind side" bushings used in the misaligned, fastener receiving holes of structural members. A shaft is sized to extend into the eccentric bores, and a latch element is laterally carried by the shaft and adapted to extend into, and retract from at least one indentation in the bore of a selected bushing for rotational orientation thereof. An adjustment bushing is carried by the shaft and has a uniform cylindrical wall thickness equal to the minimum wall thickness of the work side bushing. An alignment collar is also carried by the shaft and has an aperture that receives the shaft, the collar having a larger diameter than the diameter of an engaged bushing to enable application of torque and visual reference for detecting axial angularity misalignment between said bushing and its receiving hole in the structural member. When used with the alignment collar, the adjustment bushing gauges and establishes the position of the blind side bushing to enable insertion of the work side bushing and a fastener in a more efficient manner without need for additional rotation of either the blind side or the work side bushing. Hence, the work side and blind side bushings may be accurately aligned through the utilization of both the alignment collar and the adjustment bushing.

3,783,497

METHOD FOR MAKING THIN WALLED METAL TUBING

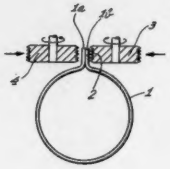
Wolfram Griesinger, Ottobrunn, Germany, assignor to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hanover, Germany

Filed Feb. 24, 1972, Ser. No. 228,947

Claims priority, application Germany, Feb. 25, 1971, P 21 08 895.9

Int. Cl. B23p *3/00*

U.S. Cl. 29—460 **6 Claims**



Longitudinally paid metal strip or tape is formed into a tube, the two edges of the tape or strip having been flanged so that upon tube forming the flanges abut and extend radially outwardly; and squeezing the flanges for the flanges to undergo plastic deformation and forming a tightly closed tab; the two flanges may be differently high and the higher one is folded around the lower one prior to squeezing the flanges into a three layer tab. The two flanges may be quite long and of similar height, and they are bent over prior to squeezing to form a four layer tab. The tab may then be bent against the tube which is subsequently jacketted in plastic.

3,783,498

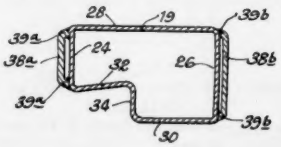
METHOD OF CONSTRUCTING A HOLLOW BEAM

Harris P. Moyer, Deerfield, and Herbert H. Klein, Arlington Heights, both of Ill., assignors to Unarco Industries, Inc., Chicago, Ill.

Division of Ser. No. 74,046, Sept. 21, 1970, Pat. No. 3,735,547. This application Apr. 11, 1973, Ser. No. 349,913

Int. Cl. B23k *31/02*

U.S. Cl. 29—471.3 **4 Claims**



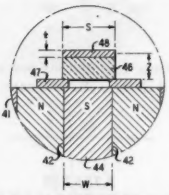
A hollow steel beam is formed of sheet metal by automated forming machines including a continuous welding operation. To provide sufficient material along the upper and lower surfaces of the beam, to develop the full potential strength of the beam in bending, reinforcing strips are welded to the upper and lower stringer sections of the beam in an automated machine operation.

3,783,499

SEMICONDUCTOR DEVICE FABRICATION USING MAGNETIC CARRIER

Harry Elroy Hughes, Jr., and Meyer Herbert Wachs, both of Reading, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 136,127, April 21, 1971, abandoned. This application Apr. 24, 1972, Ser. No. 246,852
Int. Cl. B01j 17/00
U.S. Cl. 29—574 5 Claims



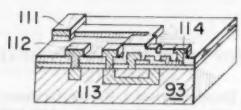
A process is described in which a semiconductor slice containing an array of individual semiconductor devices is temporarily mounted on a magnetic carrier plate initially by adhesive means. Final processing, such as lapping or otherwise thinning the slice, is done and a film of magnetically responsive material is applied to the semiconductor slice. Alternatively such material may be included in the earlier metalization of the semiconductor devices. The slice is then treated to separate it into an array of individual devices and the adhesive is removed. The devices then remain in the original spaced array and orientation for electrical testing and assembly into apparatus. In such form the devices are suitable for transportation.

3,783,500

METHOD OF PRODUCING SEMICONDUCTOR DEVICES

Takashi Tokuyama, Hoya, and Takaaki Mori, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 716,033, March 26, 1968, Pat. No. 3,632,433. This application Apr. 23, 1971, Ser. No. 136,795
Claims priority, application Japan, Apr. 26, 1967, 42/26325
Int. Cl. B01j 17/00
U.S. Cl. 29—577 3 Claims



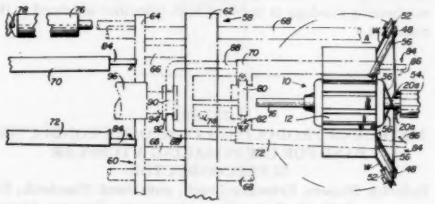
A method of producing a semiconductor device in which a first insulating film of silicon dioxide is provided on surface of a semiconductor substrate, at least one passive circuit element is formed on said first insulating film, and a second silicon dioxide layer containing uniformly a small amount of phosphorus is deposited from the vapor phase on said first insulating film and passive element, thereby realizing stable passivation of the electrical characteristics of said semiconductor device. The water-proof property and accurate etching of said films are also accomplished.

3,783,501

AUTOMATIC ARMATURE WINDING

John M. Biddison, and Clarence W. Donnaker, both of Dayton, Ohio, assignors to The Globe Tool and Engineering Company, Dayton, Ohio

Division of Ser. No. 812,258, April 1, 1969, Pat. No. 3,628,229. This application July 19, 1971, Ser. No. 163,978
Int. Cl. H01r 43/00
U.S. Cl. 29—597 4 Claims



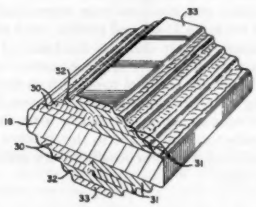
In the automatic winding of armatures, the last lead wire from a coil wound in an armature is looped about an appropriate commutator tang and the wire portion connected between the newly wound armature and an unwound armature is cut closely adjacent the aforementioned commutator tang. Also disclosed is a double flier apparatus for winding armatures, wire cutting assemblies, and a transfer mechanism adapted to hold the connecting wire portions in a position where they may be cut closely adjacent the tangs about which the wires are looped. In one embodiment the commutator tangs are collapsed at the time the connecting wire portions are cut.

3,783,502

METHOD OF MAKING HIGH SPEED HOMOPOLAR GENERATOR WITH STRAIGHT WINDING CONSTRUCTION

Eike Richter, and George E. Brissey, both of Erie, Pa., assignors to General Electric Company, Wilmington, Mass.

Division of Ser. No. 181,001, Sept. 16, 1971, Pat. No. 3,737,696. This application Sept. 18, 1972, Ser. No. 290,137
Int. Cl. H02k 15/00
U.S. Cl. 29—598 4 Claims



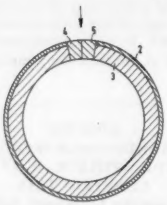
A high speed homopolar generator is described capable of operating efficiently at rotational speeds of 90,000 rpm and above. The generator includes a smooth cylindrical rotor with axially in-line magnetic north and south poles at opposite ends of the rotor. The AC windings in the individual stator stacks are offset by 180 electrical degrees as they pass between stacks to insure that the induced voltage in the active portions of each winding are of the proper polarity. The cylindrical rotor construction minimizes windage losses and includes a straight bar of magnetic material with the circumferential in-

terpolar space filled with a non-magnetic material. The non-magnetic material is bonded to the magnetic bar so that the resulting magnetic-non-magnetic composite rotor is strong enough to withstand the mechanical stresses to which it is subjected at speeds in excess of 90,000 rpm. Layers of the non-magnetic material are deposited on the bar of magnetic material by a plasmaarc hot wire welding process and the assembly is then machined into the desired cylindrical shape to minimize windage. In this fashion, the geometry of the rotor is optimized, the maximum amount of axial magnetic section is obtained with the simplest rotor geometry, the requisite physical strength is obtained, while at the same time, reducing or minimizing windage at the very high velocities obtained in the machine.

3,783,503
METHOD OF PRODUCING A COMPOSITE CONDUCTOR BAND FOR USE IN MAKING A TUBULAR SUPERCONDUCTOR

Heinrich Diepers, Erlangen-Bruck, and Horst Musebeck, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 10, 1972, Ser. No. 279,385
Claims priority, application Germany, Nov. 2, 1971, P 21 54 452.5
Int. Cl. H01v 11/00
U.S. Cl. 29—599 **6 Claims**



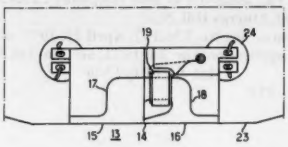
A method for producing a conductor band which includes a layer of niobium adjacent a layer of an electrically normal conducting metal and respective ribbon-like niobium chords defining the longitudinal edges of the band. The conductor band is produced by joining niobium chords to the longitudinal narrow sides of a niobium strip respectively to form a niobium band having a U-shaped profile, each of the chords having a thickness greater than the thickness of the strip, at least approximately filling the space bounded by the inside surface of the U-shaped niobium band with an electrically normal conducting metal, and then joining the normal conducting metal to the U-shaped niobium band to form the conductor band. The conductor band made in this manner is used in a method of producing a tubular conductor for superconducting cables and the like.

3,783,504
PROCESS OF FABRICATING MULTICHANNEL MAGNETIC HEAD UNITS

Guy Prival, Chilly Mazarin, and Lucien Robert Prieur, Ecouen, both of France, assignors to Societe Industrielle BULL-GENERAL Electric (Societe Anonyme), Paris, France

Division of Ser. No. 62,525, Aug. 10, 1970, Pat. No. 3,701,858. This application June 28, 1972, Ser. No. 267,224
Int. Cl. G11b 5/42; H01f 7/06
U.S. Cl. 29—603 **4 Claims**

A process of fabricating a multichannel magnetic transducer wherein each of a plurality of aligned magnetic heads thereof are formed of a plurality of composite laminations,

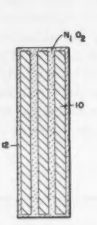


wherein the composite laminations are arranged to form a magnetic circuit and electric and magnetic shields.

3,783,505
METHOD FOR ELECTRICALLY INSULATING MAGNETOSTRICTIVE MATERIAL

Oscar W. Schoen, Jr., Corona, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 29, 1972, Ser. No. 239,153
Int. Cl. H01f 7/06
U.S. Cl. 29—609 **6 Claims**



A process of electrochemically plating and annealing in a protective atmosphere the surface of ferrous material used in the construction of underwater transducer scrolls and transformer cores to insulate sheets and plates from each other. The process also eliminates work hardening of the material due to handling, and increases operating and production efficiency.

3,783,506
METHOD OF PRODUCING ELECTRICAL FUSE ELEMENTS

Lothar Rehfeld, Drosselbartstr 4, Berlin, Germany

Filed Oct. 12, 1971, Ser. No. 188,582
Claims priority, application Germany, Oct. 13, 1970, P 20 50 125.1
Int. Cl. H01h 69/02
U.S. Cl. 29—623 **14 Claims**

The present disclosure relates to a method of producing electrical fuse elements by single or multiple vacuum deposition of one or several electrically conductive elements or compounds onto substrates of insulating materials in forming thereon resistance paths having predetermined geometrical configurations and a predetermined electrical conductivity and/or magnetic, optical, radioactive, photoconductive or semiconductive properties.

3,783,507

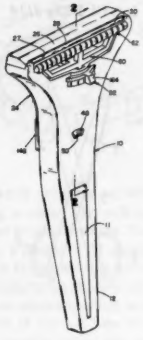
STRIP FEED SAFETY RAZOR

Roger L. Perry, Lynnfield Center, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 887,910, Dec. 24, 1969, abandoned. This application Oct. 8, 1971, Ser. No. 187,610

Int. Cl. B26b *21/26, 21/52*

U.S. Cl. 30—40.1 19 Claims



A shaving implement has a body member and front and rear cover members. The body member defines a blade supply position, a blade take up position, and a blade support platform which receives a shaving length of ribbon-like razor blade in supporting position with the sharpened front edge of the blade projecting beyond the front edge of said support platform, and a blade guard structure extending in generally parallel spaced relation to and disposed forwardly of the front edge of said blade support platform. The front cover member has integral upstanding spaced side wall portions and an end wall portion which define a recess for receiving the body member and an integral handle portion that extends downwardly away from the recess. The rear cover includes a cap portion that overlies the blade support platform, and a spring member that acts against the blade support platform to urge said blade support platform toward said cap portion for securing said blade in proper shaving position on said support platform between said cap portion and said support platform while allowing sliding movement of said blade across said platform. Blade take up mechanism that is coupled to the take up position and operates to position a sequence of shaving portions of said blade on said blade support platform, includes a molded member that comprises an arbor portion to which one end of the blade is secured, a handle portion, and a shaft portion connecting the arbor and handle portions, the shaft portion being journalled in the body member.

3,783,508

ELECTRIC SHAVERS

Norman Joseph Brown, Maidenhead; Charles Christopher Packham, Wokingham, and Raymond Graham Parsonage, Maidenhead, all of England, assignors to The Gillette Company, Boston, Mass.

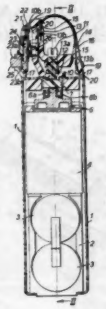
Filed Aug. 13, 1971, Ser. No. 171,476

Claims priority, application Great Britain, Aug. 14, 1970, 39,377/70; Mar. 12, 1971, 6,714/71

Int. Cl. B26b *19/02, 19/20*

U.S. Cl. 30—43.92 2 Claims

An electric dry shaver of the cordless type has the motor, battery and other parts supported in an integrally moulded body frame, a sheet metal body casing enclosing the frame and supported parts, with a cutter drive member projecting through the casing and carrying externally thereof a reciprocable cutter which co-operates with a shear plate carried on a head casing detachably secured to the body. The head casing also carries a long hair trimmer. Provision is made for recharging the cells from an external power source and for operating direct from an external source in an emergency, suitable external sources for both purposes being disclosed.



3,783,509

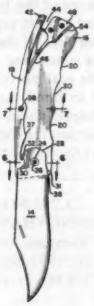
FOLDING KNIFE

Ronald W. Lake, 38 Illini Dr., Taylorville, Ill.

Filed Feb. 11, 1972, Ser. No. 225,699

Int. Cl. B26b *1/04*

U.S. Cl. 30—161 3 Claims



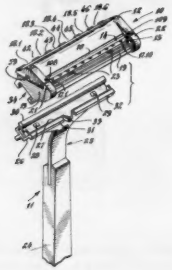
The following specification describes a knife in which a pair of plates are spaced apart along one edge by an elongate pivotable detent member having a tooth at one end for engagement in a recess of the blade under the influence of a cantilever spring to latch the blade in open position. The cantilever spring is integrally formed on a spacer located at the butt end of the knife and the detent member is operated from the butt end against the spring bias to release the blade for enabling the blade closure. The detent member tooth also engages a recessed portion of the blade to hold the blade closed under the spring bias. A projection adjacent the cutting edge of the blade engages a stop on the detent to prevent the cutting edge of the blade from being dulled on closure. In addition the external surfaces of the plates are recessed to receive a respective inlay of contrasting appearance and the pins supporting the blade and spacer are finished flush with the plate surface to disguise their appearance.

3,783,510

RAZOR HAVING TANDEMLY MOUNTED BLADES BONDED IN A DISPOSABLE CARTRIDGE

Jan Dawidowicz, Fairfield, and Frank A. Ferraro, Trumbull, both of Conn., assignors to Warner-Lambert Company, Morris Plaines, N.J.

Filed Oct. 22, 1971, Ser. No. 191,665
Int. Cl. B26b *21/24, 21/20, 21/54*
U.S. Cl. 30—32 R 5 Claims



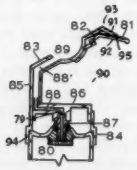
The specific disclosure provides a disposable bonded blade cartridge having a pair of single edge blades tandemly mounted and vertically spaced apart by a spacer. The blades and the spacer are permanently bonded in the cartridge, and the spacer has a plurality of channels for providing flow paths for shaving residue from between the cutting edges of the tandemly mounted blades rearwardly between the blades and out the rear end of the cartridge. The cartridge comprises an upper cap portion and a lower blade seat portion. The lower blade is positioned against vertically rising stops extending from the front part of the blade seat portion. The spacer is also positioned against the stops of the blade seat portion, and the upper blade is positioned against vertically rising stops of the forward and outward portions of the spacer. The cap portion has a plurality of posts extending downwardly through the blades, spacer and blade seat portion which are deformed at the lower ends thereof to bond the components of the cartridge together. A T-shaped channel is formed in the lower side of the blade seat portion for sliding engagement with outwardly extending flanges formed at the top end of a holder.

3,783,511

LATHER DISPENSING SHAVING INSTRUMENT

Roger D. Pass, 1119 W. Montana Ave., St. Paul, Minn.

Filed Mar. 10, 1971, Ser. No. 122,686
Int. Cl. B26b *21/44, 21/52*
U.S. Cl. 30—41 1 Claim



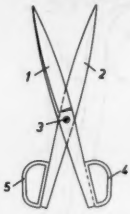
The basic elements for shaving the face, a razor, a lather dispensing container, a lather spreading surface and an optional heat transfer device are combined into one operable unit with each element functionally cooperating together to form an Integrated Shaving Instrument.

3,783,512

SCISSORS

Werner Schon, No. 15, Eintrachtstrasse, Solingen, Germany

Filed Apr. 27, 1971, Ser. No. 137,931
Claims priority, application Germany, Apr. 28, 1970, P 20 20 702.7
Int. Cl. B25g *3/34*
U.S. Cl. 30—254 12 Claims



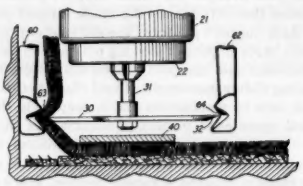
A pair of scissors comprise a pair of blade members preferably made of bright steel sheeting and including each a blade part and a handle part with plane faces; a pivot pin connecting said blade members with one another at the end portions of the blade parts adjacent the handle part, and two initially separate grasp eyes each made of a section of bright material and secured to its associated handle part at large-area plane faces formed on said handle part and said grasp eye.

3,783,513

CARPET CUTTER

James L. Escoe, Route No. 2, Loganville, Ga.

Filed Mar. 21, 1972, Ser. No. 236,673
Int. Cl. B26b *25/00*
U.S. Cl. 30—273 6 Claims



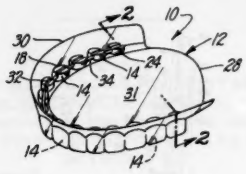
Apparatus for use in cutting carpet including a frame support means having a power driven motor for supporting a rotary cutting disc. The cutting apparatus includes a skid plate mounted beneath the rotary cutting disc and attached to the frame support means by adjustable support means whereby the skid plate can be secured in a plurality of vertically adjusted positions relative to the rotary cutting disc. The cutting apparatus includes a pair of diametrically opposed backing plates supported by adjustable link means and detailed in location to include a shaped surface for cooperating with the rotary cutting disc to provide a backing means for carpet being cut. A sharpening element is adjustably mounted on the frame support means for movement from a displaced inoperable position to an adjusted position for sharpening the rotary cutting disc.

3,783,514

STRUCTURES FOR USE IN CREATING ARTIFICIAL DENTURES

Daniel D. Kersten, 984 Chestnut, Escondido, Calif.

Filed Aug. 14, 1972, Ser. No. 280,530
Int. Cl. A61c 13/00
U.S. Cl. 32—2 5 Claims



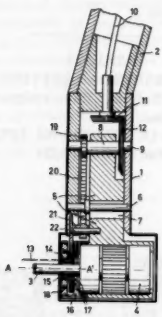
A structure for use in creating an artificial denture can be constructed utilizing a sheet-like self-supporting part and a plurality of simulated tooth elements. The self-supporting part is formed to include a plurality of upwardly opening pockets located in a generally U-shaped line corresponding to a line of teeth in a mouth and includes regions on both sides of this line having upper surfaces corresponding to the configuration of a mouth on both sides of such a line of teeth. The simulated tooth elements are located within the pockets so as to be exposed at the upper surface of said part. Preferably the pockets have open bottoms. The pockets are preferably interconnected; several of the tooth elements can be integral with one another.

3,783,515

DENTAL DRILLING MACHINE HAVING IMPROVED COOLING

Michel Joseph Auphan, Courbevoie, and Guy Martin, Puteaux, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 10, 1972, Ser. No. 296,314
Claims priority, application France, Jan. 21, 1972, 7202043
Int. Cl. A61c 1/08
U.S. Cl. 32—28 7 Claims



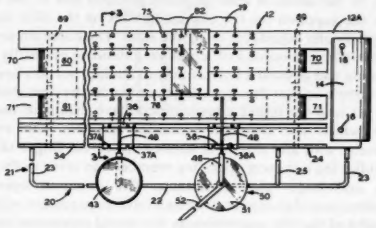
A dental drilling machine having a drill spindle which performs two periodic movements:
a fast rotary movement about its own axis and a comparatively slow rotary movement about a stationary axis which is parallel to the drill spindle. Moreover, a cooling liquid jet which is parallel to the drill spindle performs a slow periodic movement about the same stationary axis such that the liquid jet is periodically directed to the part of the borehole which has been vacated as a result of the slow movement of the drill spindle.

3,783,516

NAVIGATION DEVICE

Nathan Kurzrok, 40 Candy Ln., Great Neck, N.Y.

Filed May 17, 1971, Ser. No. 143,902
Int. Cl. G01b 5/24
U.S. Cl. 33—1 SD 5 Claims



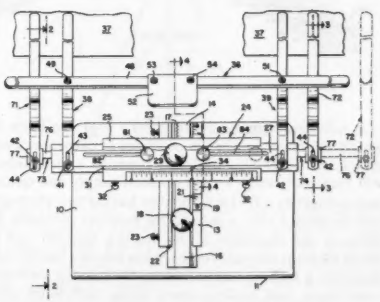
A navigation device which includes map holding means and a position indicator, together with a plurality of mounted and mountable navigation aids. Such device is of a construction whereby the aids may be interchanged and used individually or in combination to suit varied navigational requirements and lending itself to single handed manual operation.

3,783,517

PATTERN GRADING MACHINE

David Post, 69-20 108th St., Forest Hills, N.Y.

Filed Feb. 14, 1972, Ser. No. 225,821
Int. Cl. A41h 3/00
U.S. Cl. 33—17 A 7 Claims



This invention has to do with a pattern grading machine adapted to be supported upon a table surface at the edge thereof and provided with adjustable slide assemblies, one of which extending fore and aft of the edge of the table and the other of which is carried upon the slide of the first assembly and running longitudinally on the machine and set to carry a series of finger clip assemblies for grasping the pattern that is to be moved from one station to another either to reduce the size of the pattern or to enlarge the pattern upon a pattern mater lying under the original pattern. The individual finger clip assemblies are connected to the longitudinally extending slide for fore and aft adjustment so that one finger can be extended beyond the other and wherein extensions are provided

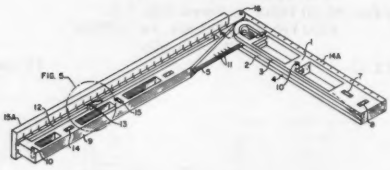
with this means to have an unusually large adjustment of the finger clip assembly and at the same time be sufficiently rigidly carried and secured to the slide for adjustment therewith. A common operating member is provided upon the slide and adapted to engage clip members on each of the clip assemblies so that the clip assemblies can be opened in unison to allow the pattern to be slid under the same. Extensions are provided on the ends of the slides for carrying further clip assemblies and the common operating member is extended in such a manner as to overlie the assemblies on the extensions from the ends of the longitudinally extending slide. A clamping nut for holding the finger clip assemblies on the longitudinally slide may also serve to hold the clip assemblies extensions on the ends of the slides in their adjusted position and at the same time the supports for the clip assemblies on the slide can be longitudinally adjustable along the slide. The common operating member is mounted on a bracket extending upwardly from the slide and beyond a horizontally extending portion having a slot therein so that the operating member can be operated fore and aft and the upper clip members have extended handles with which the common operating member can engage whereby with any extent of adjustment of the finger clip assemblies the common operating member can serve as the handles and finger clip assemblies. The common operating member can also extend over and have engagement with the handles of the clip assemblies on the lateral extensions in their adjusted positions.

3,783,518

CARPENTER'S TOOL

Robert J. Jones, Rt. 2, Proctorville, Ohio

Filed May 10, 1971, Ser. No. 141,616
Int. Cl. B43l *7/06*
U.S. Cl. 33—75 R **10 Claims**



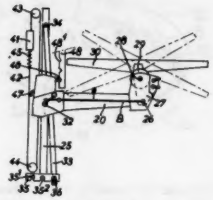
A new and improved carpenter's tool has been designed which will measure pitches or angles in carpenter's work with speed and ease. This tool also contains a mechanism which will lock the tool in a rigid position simply and quickly. This tool comprises a first leg member having two elements at one end forming a slot; a second leg member pivotably mounted between the shoulders of the first leg member and having a blade element adapted for insertion into the slot of the first leg member; a locking sleeve joining the two leg members at the pivot point, said locking sleeve being right-hand threaded at one end and left-hand threaded at the other end; and a locking lever slidably mounted through the first and second leg member and through the locking sleeve such that a turn of the lever from either side of the tool will cause the shoulder elements of the first leg member to bind down against the blade element of the second leg member locking the leg members into a rigid position. The tool also can contain a first sliding member mounted perpendicular to and slidably connected to the side of the first leg member and a second slidably member slidably connected to the side of the second leg member said second sliding members being spring pivotably connected to the first sliding member. These slidably mounted members enable an angle measured by the two leg members to be extended beyond the pivot point connecting the first and second leg members.

3,783,519

DRAWING APPARATUS

Daniel Sartori, residence Jeanne d'Arc, rue Jeanne d'Arc, Pau, France

Filed Jan. 13, 1971, Ser. No. 106,088
Claims priority, application France, Jan. 14, 1970, 7001484; Dec. 22, 1970, 7046928
Int. Cl. B43l *13/14*
U.S. Cl. 33—77 **19 Claims**



Perspective effects in the basic lines of a technical drawing are obtained either by means of a transparent sheet marked with lines and placed on a drawing board illuminated from behind, or by use of a drawing board provided with a pivotable rule mounted on an arm that can be moved in a vertical direction, control means being provided so that the rule will alter direction and be aligned with one "vanishing point" over the whole vertical traverse of the supporting arm.

3,783,520

HIGH ACCURACY ALIGNMENT PROCEDURE UTILIZING MOIRE PATTERNS

Michael Charles King, Basking Ridge, N.J., assignor to Bell Telephone Laboratories, Inc., Murray Hill, Berkeley Heights, N.J.

Division of Ser. No. 75,983, Sept. 28, 1970, Pat. No. 3,690,881.
This application Aug. 1, 1972, Ser. No. 276,913
Int. Cl. G03c *5/00*
U.S. Cl. 33—180 R **1 Claim**

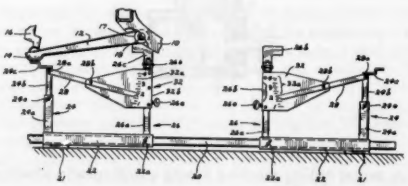
A pair of moire gratings that comprise a similar pattern of concentric lines but have a different pitch are used with a microscope to provide extremely accurate alignment of objects such as a photolithographic mask and a substrate of a semiconductive material.

3,783,521

VEHICLE TORSION BAR SETTING GAUGE

Raymond H. Schmidt, Buffalo, Minn., assignor to Royal Industries, Inc., Osseo, Minn.

Filed Feb. 18, 1972, Ser. No. 227,353
Int. Cl. G01b *5/24*
U.S. Cl. 33—181 AT **6 Claims**



This is a gauge for facilitating the setting of the two torsion bars on an automobile and embodies a single base unit

adapted to be stably supported on the same surface as the wheels of the car, the base unit supporting two pairs of upstanding gauge strut assemblies, each pair of which includes extensible portions with feeler elements for respective engagement with two vehicle reference surfaces and also includes an elongated pointer arm coupled to the pair of extensible portions to indicate the relative elevation differential between said vehicle reference surfaces.

3,783,522

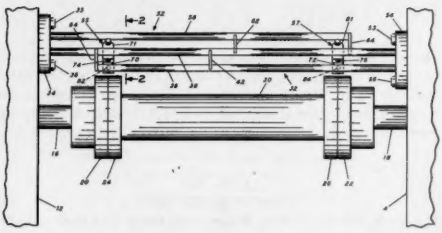
METHOD AND APPARATUS FOR SHAFT ALIGNMENT

Vaal Ray Dodd, Box 273, Rt. 2, Grand Bay, Ala.

Continuation-in-part of Ser. No. 240,930, April 4, 1972, abandoned. This application Mar. 9, 1973, Ser. No. 339,907

Int. Cl. G01b *7/31*

U.S. Cl. 33—181 R **17 Claims**



Method and apparatus for obtaining misalignment data of rotating apparatus under operating conditions and for offset aligning shafts of rotating apparatus at ambient conditions to provide substantially coaxial alignment when operating under equilibrium conditions. Remotely operable proximity sensing means and reference means are supported by elongate members, bearing a predetermined relationship to shaft axes, and cooperate to continuously detect at least functions of relative horizontal and relative vertical displacement of the elongate members. The remotely operable proximity sensing means further cooperates with display means to provide a continuous display of the proximity of the remotely operable proximity sensing means to the reference means and provide a display indicative of the functions of relative horizontal and vertical displacement of the elongate members occurring as the rotating apparatus changes from atrest ambient condition to a thermal equilibrium operating condition. This display is provided at a location remote from the shafts of the rotating apparatus and remote from the elongate members.

3,783,523

TIRE CALIPER

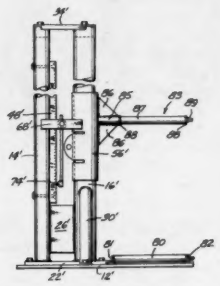
Ivan O. Smith, 1353 Acacia St., San Bernadino, Calif.

Filed Nov. 30, 1971, Ser. No. 203,154

Int. Cl. G01b *5/08, 5/20*

U.S. Cl. 33—203.13 **2 Claims**

A tire caliper comprising a tire-engaging member having two parallel posts extending perpendicularly therefrom. At their other ends, the posts are connected by a bridge-like member which is secured by tight-fitting bolts screwed into plugs inserted into the ends of the posts, so as to prevent twisting of the posts. A sleeve-like head is slidably mounted on one of the posts, and projecting laterally from one side thereof is a caliper arm. A pair of guide fingers project from the other side of the head and slidably engage the other post on opposite sides thereof to keep the head from turning. A graduated scale is fixed to said other post on the side facing said one post, and



a pointer on the head indicates on the scale the outside diameter of a tire engaged on one side by said member and on the other side by said caliper arm.

3,783,524

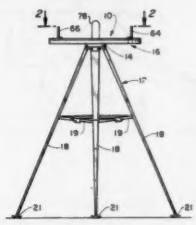
UNDERWATER ANGLE MEASURING DEVICE

John B. Ciani, Port Hueneme, Calif., and Richard G. Luthy, Davisville, R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 7, 1971, Ser. No. 205,617

Int. Cl. G01c *1/00, 1/02*

U.S. Cl. 33—285 **4 Claims**



An underwater angle measuring instrument comprising a plane table tripod with a leveling head attached thereto and an angle reading device positioned on the head. The latter includes an outer bearing circle, a vernier circle and adjustment means. By sighting at one specific point and then at a second point, the difference in bearings is the angle of interest.

3,783,525

LEVEL

C. W. Bloxom, 1025 Devore Ave., Bakersfield, Calif.

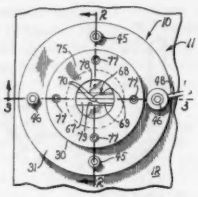
Filed May 26, 1972, Ser. No. 257,176

Int. Cl. G01c *9/24*

U.S. Cl. 33—379 **12 Claims**

A level having a body with an upper surface, the upper surface having a U-shaped passage provided therein having a curved end and legs defining parallel axes, the body also having a base for supporting the body at an angle of inclination along the axes of the legs in the direction of the curved end and relative to the base; a transparent plate mounted on the upper surface in sealing relation to the passage; and fluid

disposed in the passage so as to define a bubble extending through the curved end of the passage and into the legs, the bubble having ends adapted to register the horizontal or vertical disposition of the base along an axis normal to the axes of the legs when said ends of the bubble define a line of reference normal to the axes of the legs.



3,783,526

PROCESS FOR THE TREATMENT OF MATERIAL LENGTHS

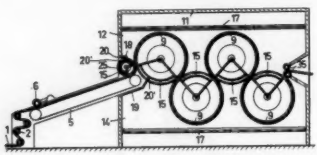
Heinz Fleissner, Egelsbach near Frankfurt am Main, Germany, assignor to Vepa AG, Basel, Switzerland

Division of Ser. No. 799,478, Feb. 14, 1969, Pat. No. 3,605,280, which is a continuation-in-part of Ser. No. 654,728, July 20, 1967, abandoned. This application July 1, 1970, Ser. No. 60,205

Claims priority, application Germany, Feb. 14, 1968, P 17 10 513.4The portion of the term of this patent subsequent to Mar. 31, 1987, has been disclaimed.

Int. Cl. F26g *3/06, 13/30*

U.S. Cl. 34—12 **9 Claims**



The present disclosure is directed to a process for the treatment of materials which comprises a heat-insulated treatment chamber, a plurality of sieve drum means subjected to a suction draft rotatably disposed within said treatment chamber, fan means for producing a suction draft and for circulating the treatment medium in said treatment chamber, heating means provided in the circulation zone of the treatment medium, tentering means containing tensioning chains at least partially disposed outside of the treatment chamber as inlet means, said tentering means cooperating with the sieve drum means for the effective conveyance of the material being treated to said sieve drum means, and outlet means for removing the material being treated from the treatment chamber.

3,783,527

DRYING APPARATUS WITH FEED AND HUMIDITY CONTROL

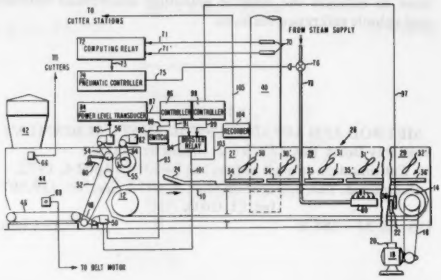
Gerald Jon Driscoll, Crozet, and James Larkin Wellborn, Waynesboro, both of Va., assignors to E.I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 13, 1972, Ser. No. 314,603

Int. Cl. F26d *13/12;* **F26b** *21/08*

U.S. Cl. 34—56 **2 Claims**

An improved dryer for bulk material of the type employing a feed apron, a pin elevator and an endless, foraminous belt moved through a series of air drying zones, the improvement comprising (A) a humidity transducer in the air exhaust stack arranged to regulate flow of steam to a sparger under the belt in a zone and (B) a power level transducer attached to the pin elevator drive motor, a temperature transducer located under the belt in the final zone, each transducer connected through a separate controller to a booster relay arranged to select the lower of the two control signals and apply this to regulate feed apron drive motor speed.



3,783,528

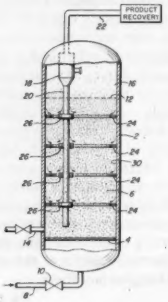
REACTOR STAGING

Harold R. Sheely, Newton, Mass., assignor to The Badger Company, Inc., Cambridge, Mass.

Filed Jan. 5, 1971, Ser. No. 104,003

Int. Cl. F26b *17/10*

U.S. Cl. 34—57 A **1 Claim**



Catalyst staging of a fluidized catalyst bed in a reactor is achieved by providing horizontal ridges or flanges which interrupt downward flow of catalyst as a dense layer along vertical interior surfaces of the reactor.

3,783,529

CLOTHES DRYER WITH PRESS SAVER CYCLE INCLUDING PERIODIC SIGNALS

James L. Miller, Dayton; Carl J. Wright, Bellbrook, and Marshall C. Harrold, Dayton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

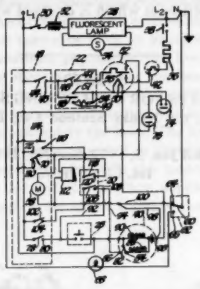
Filed Nov. 24, 1971, Ser. No. 201,763

Int. Cl. F26b *19/00*

U.S. Cl. 34—45 **3 Claims**

A clothes dryer including a press saver cycle to obviate fabric wrinkling is provided with an intermittent buzzer signal

during the extended tumbling following normal drying. The requisite intermittent signal is developed by the dryer timer

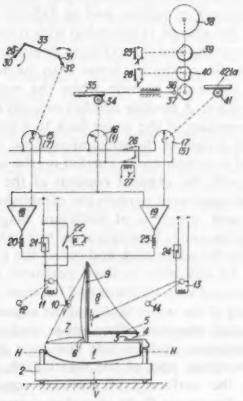


control by the addition of appropriate contacts, thus avoiding the necessity for an auxiliary timer.

3,783,530
TRAINING DEVICES

Bruce Duval, Nassau, Bahamas, assignor to T. P. I. Limited, Nassau, Bahamas

Filed Dec. 6, 1971, Ser. No. 205,176
Claims priority, application Great Britain, Dec. 5, 1970, 57,887/70
Int. Cl. G09b *9/06*
U.S. Cl. 35—11 **10 Claims**

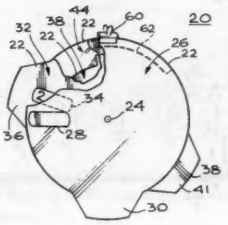


A simulator by which a pupil can learn something of the art of sailing, has a sail, a device for giving the sail a fluttering movement, and means for starting and stopping the fluttering so that the pupil can be provided with a representation of the fluttering of a sail which occurs in actual sailing. The fluttering is preferably started and stopped automatically by a control system and the device is conveniently a vibrator carried by the sail itself. In learning to sail on water, pupils have difficulty both in determining the direction of the wind, and in setting the sails to provide a useful forward thrust even when the wind direction is known. It is found that this difficulty is minimised for pupils who have been trained on the present simulator.

3,783,531
TEACHING AID DEVICE

Marion R. Kattenhorn, 4592 W. Olive, Fresno, Calif.

Filed Sept. 22, 1972, Ser. No. 291,287
Int. Cl. G09b *17/04*
U.S. Cl. 35—35 B **12 Claims**

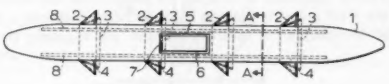


The improved device comprises a plurality of stacked plates or disks joined together on a concentric axis for individual rotation. The plates include first and second masking plates having alignable viewing apertures and behind them first and second viewing plates of differing diameter and bearing radially alignable indicia on the front surfaces thereof, which indicia are viewable through the masking plate apertures. A clamp or the like can be provided to releasably hold the front masking and second viewing plate together while permitting free rotation of the other plates. Indicia on the back of the two viewing plates facilitate alignment of the indicia of the front of those plates. Rapid rotation means, such as a spring-controlled advancing mechanism can be provided to permit the second masking plate to rotate at a controlled rate relative to the front masking plate to permit only a predetermined momentary viewing of the indicia on the viewing plates.

3,783,532
WATER SHOES

Hubert W. Harradine, 1688 Armanda St., Windsor, Ontario, Canada

Filed May 24, 1973, Ser. No. 363,607
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 AA **3 Claims**



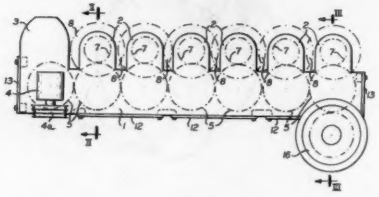
This invention consists of shoes for walking on the surface of water as a sport or recreation. It consists primarily of a foam plastic, streamlined, solid throughout pontoon for each foot of the wearer. The pontoons are provided with flexible fins which are wrapped around the sides and bottom of, and attached to, the pontoon. These fins open up to resist backward motion thereby providing traction, and close against the bottom and sides of the pontoon to reduce drag during the forward motion. Also, when the fins are closed, folds are formed at the bottom corners of the pontoon to provide additional stability.

3,783,533

MOWING MACHINE

Kark-Heinz Konig, and Antonius Huntrup, both of Essen, Germany, assignors to H. Vissers N.V., Nieuw-Venne, Netherlands

Division of Ser. No. 795,296, Jan. 30, 1969, Pat. No. 3,623,300. This application Dec. 9, 1970, Ser. No. 96,546
Int. Cl. A01d 75/30
U.S. Cl. 56—6 2 Claims



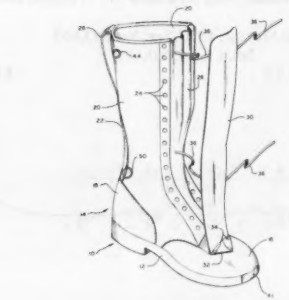
A mowing machine adapted to be attached to a vehicle, as a tractor or the like, which comprises a carrier including cutter discs, which are mounted thereon for rotation about a vertical axis and to overlap each other in their operating areas. A plurality of gear wheels is disposed inside of the carrier and extends to its outer end for rotating the cutter discs. A plurality of cutter gear wheels is arranged each meshing the corresponding of the gear wheels. A carrying device and a drawing device are adapted to be connected to the rear end of a tractor and to its transmission, respectively. Tension springs and a cable connecting the carrying device with said carrier, are provided to balance out at least a part of the weight of the carrier upon raising the latter into transporting position.

3,783,534

PROTECTIVE BOOT

Richard F. Phillips, Hillside Dr., Kirkwood, N.Y., and Gordon S. Fluharty, R.D. No. 1, Box 7, Chenango Forks, N.Y.

Filed May 14, 1973, Ser. No. 360,052
Int. Cl. A43b 13/22
U.S. Cl. 36—72 R 8 Claims



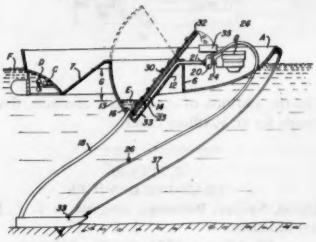
A protective boot designed especially for wear by motorcycle riders, particularly in off-the-road or trail riding, and in racing. The boat includes a protective front tongue extending from a hinged attachment near the toe, in covering relation to the boot laces and the wearer's shin. The tongue includes, between two layers of leather, a rigid shin protector. Similar rigid lower leg protectors are provided on both sides of the wearer's legs above the ankle, between two layers of the boots. The tongue is held in place by straps at the top and bottom which pass through loops attached in pairs to the back strap of the boot. The lower pair of loops also serves as an anchoring means for straps holding a "steel shoe" in place over the sole and toe of the left boot which is dragged when rounding corners.

3,783,535

APPARATUS FOR COLLECTING SPECIMENS

Fletcher Hanks, c/o Hanks Seafood Co., Inc., P.O. Box 70, Easton, Md.

Filed Jan. 5, 1972, Ser. No. 215,454
Int. Cl. E02f 5/00
U.S. Cl. 37—55 1 Claim



Biological and geological specimens are collected from the water, floor, or sub-floor of a waterway by the use of a surface craft carrying a water tank which is open to atmosphere and which is mounted for downward movement into partial submergence in the waterway, the water tank having an intake opening adjacent its bottom and an exhaust conduit which is in adjacent but spaced relationship with respect thereto. Both the intake opening and the exhaust conduit communicate with the water at a level which is lower than the normal level of the surface of the water therein when the water tank is in its lowered position. A flexible conduit extends downwardly from the intake opening of the water tank to a point which is at or adjacent the locale of the specimens to be collected. The intake port of a suction pump carried on the surface craft communicates with the exhaust conduit of the water tank. The foregoing arrangement permits the establishment of a head in the water tank which is of sufficient magnitude to enable water to continuously flow upwardly through the flexible conduit and into the water tank and out of the exhaust conduit of the latter. An upwardly inclined perforate endless belt conveyor is disposed with its lower end between and below the intake opening of the water tank and the adjacent end of the exhaust conduit therefor. The upper end of the upwardly inclined perforate endless belt conveyor projects upwardly beyond the upper end of the water tank; and a collection device on the surface craft collects specimen which are retained on the upper flight of said conveyor as it approaches or arrives at the upper limit of its travel.

3,783,536

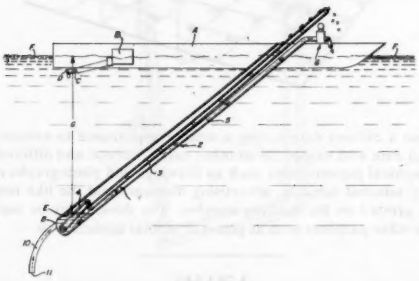
APPARATUS FOR COLLECTING BIOLOGICAL AND/OR GEOLOGICAL SPECIMENS FROM WATERWAYS

Fletcher Hanks, c/o Hanks Seafood Co., Inc., P.O. Box 70, Easton, Md.

Continuation-in-part of Ser. No. 215,454, Jan. 5, 1972. This application Aug. 29, 1972, Ser. No. 284,763
Int. Cl. E02f 3/88
U.S. Cl. 37—55 4 Claims

An elongate downwardly depending and sternwardly declining cylindrical conduit communicates with the hold of a boat at its upper end and contains an endless belt conveyor which

projects from its upper end but terminates short of its lower end. A second, but materially shorter endless belt conveyor is disposed within the cylindrical conduit and at its upper end overlaps the lower end of the first-named endless belt conveyor. A smaller elongate cylindrical conduit is disposed in the first-named cylindrical conduit, and extends beneath the first-named endless belt conveyor with its lower end terminating beneath the intermediate portion of the lower flight of the second-named and materially shorter endless belt conveyor. The upper end of the second-named and smaller elongate cylindrical conduit is connected to the suction side of a suction pump which is carried by the boat. The lowermost end of the first-named cylindrical conduit is closed except for an opening which communicates with the interior of the first-named cylindrical conduit at a position which is immediately above the lower end of the upper flight of the second-named



endless belt conveyor. Communicating with the immediately aforementioned opening is an enlarged hose which extends downwardly into the depths of the waterway from which the biological and/or geological specimens are to be recovered. The shorter, and lower, endless belt conveyor is perforate, and the upper and materially longer endless belt conveyor preferably imperforate. The head of water which is maintained on the lower end of the first-named elongate downwardly depending and stern-wardly declining cylindrical conduit will be found to be adequate to raise the specimens referred to and pass them through the aperture in the larger conduit onto the second-named lower endless belt conveyor and through the latter onto the lower end of the first-named endless belt conveyor. Thus, the two endless belt conveyors greatly assist the movement of the specimen upwardly through the larger cylindrical conduit and into the hold of the boat.

3,783,537

PLOW ASSEMBLY FOR EXCAVATING MACHINE

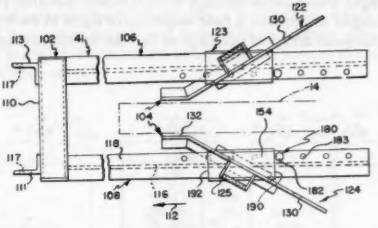
Vincent S. Penote, Shaker Heights, and Melvin K. Rear, Chesterland, both of Ohio, assignors to The Cleveland Trencher Company, Cleveland, Ohio

Division of Ser. No. 783,244, Sept. 12, 1968, Pat. No. 3,610,691. This application June 23, 1971, Ser. No. 155,831

Int. Cl. E02f *5/14*

U.S. Cl. 37—94 **9 Claims**

An excavating machine of the type including a chassis and a digging unit mounted for digging movement thereon. The unit comprising an endless wheel-like member and a plurality of peripherally spaced sets of laterally staggered tooth members detachably mounted in angularly oriented relation on the wheel-like member for moving excavated material upwardly and outwardly of the digging unit. The body of each tooth member having leading and trailing ends and inner and outer edges extending therebetween, and including an attachment portion adjacent the leading and trailing ends, and a blade portion made integral therewith adjacent the leading end and outer edge thereof. A plow assembly is mounted for selective directional adjustment on the chassis and includes an angu-



larly oriented wing-like scraper construction operative on opposed sides of the digging unit for moving excavated material away from the digging unit.

3,783,538

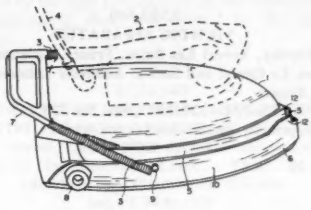
STEAMING AND IRONING APPLIANCE

Dietlof Von Arnim, Diagonal 109, No. 27-10, Bogota, Colombia

Filed Mar. 20, 1973, Ser. No. 343,043

Int. Cl. D06f *75/38*

U.S. Cl. 38—97 **2 Claims**



A steaming and ironing appliance which is suitable to be removably attached to the base plate of a conventional domestic iron comprises a hollow body having a flat bottom plate generally shaped in accordance with the shape of a conventional domestic iron and an upper plate suitably conformed for supporting the base plate of a domestic iron, a pair of coil springs with one end of each being fixedly attached to symmetrically opposed attaching means disposed on each of the appliance's side walls and with the other ends of the coil springs being attached to a rigid fastening member for removably fastening the iron against the supporting upper plate of the appliance. The hollow body of the appliance is provided with water input means and the underside of the base plate is provided with elongated recesses wherein there are arranged passages for delivering steam to a garment being ironed.

3,783,539

DIGITAL CLOCK DISPLAY

Charles E. Trame, Fox Point, Wis., assignor to Everbrite Electric Signs, Inc., South Milwaukee, Wis.

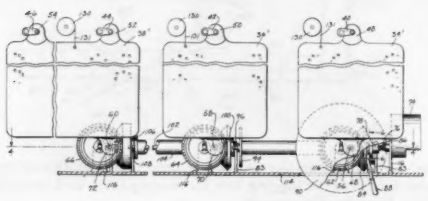
Filed June 14, 1972, Ser. No. 262,690

Int. Cl. G09f *11/00*

U.S. Cl. 40—28 C **3 Claims**

An opaque face plate has openings arranged in rectangular arrays, with each array representing one digit of a multi-digit number. A light source is mounted behind the face plate and an opaque, orbitally movable plate is mounted between each rectangular array of openings and the light source. Each or-

bitally movable plate has sets of orbitally arranged openings so that each opening, when moved into alignment with a corresponding opening in the array of openings, will transmit light through that opening in the faceplate. The geometrical pattern of light transmission through each orbitally movable plate is arranged to produce a time sequence of digits in each of the rectangular arrays of openings so that the invention may function as an illuminated digital clock. Drive means is coupled to the orbitally movable plates to drive the plates in predetermined correlation around their respective orbits. A transparent light-diffusing element may be wound over each opening in the face plate to spread the light transmitted through the openings and make the openings appear larger than they actually are.



3,783,540

VIEWING APPARATUS

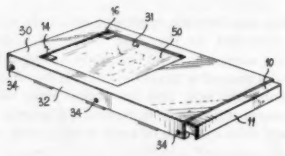
Roger Barclay, Vernet Les Bains, France, assignor to Pierre Naguet, Le Grand and Societe Anonyme Laboservice, Toulouse, France

Filed Mar. 27, 1972, Ser. No. 238,295

Claims priority, application France, Apr. 19, 1971, 7113683

Int. Cl. G09f *11/30*

U.S. Cl. 40—78.07 **10 Claims**



Apparatus for receiving a stack of flat objects and for serially presenting such objects to a viewing window is disclosed. The viewing apparatus includes a manually operated reciprocal slide member which withdraws objects from the top of a stack and returns the withdrawn objects to the bottom of the stack whereby the objects are advanced upwardly in the stack for viewing.

3,783,541

CALENDAR OR THE LIKE WITH DETACHABLE OVERLAYS

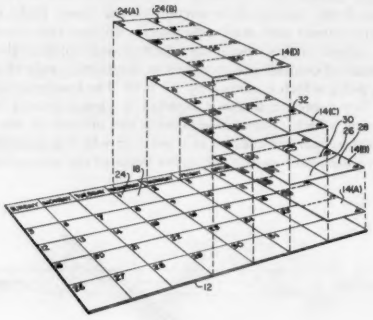
William R. Bowerman, 1824 Mississippi St., Lawrence, Kans.

Filed July 21, 1972, Ser. No. 274,046

Int. Cl. G09d *3/04*

U.S. Cl. 40—121 **4 Claims**

A graphic arts product is formed by a plurality of separable plies mounted in superimposed staggered relation over a backing member. The backing member as well as the superimposed plies bear selected graphical representations such as drawings, photographs, numbers, etc., having a predetermined established relationship. The superimposed plies are detachably connected whereby removal of one ply exposes the underlying images on two underlying plies or the backing member. The overlay device is particularly adaptable for use as a calendar whereby one overlay will be removed daily to expose a current date having a unique appearance to enhance that date with respect to all other dates. Various and different graphical presentations such as drawings and photographs of any selected subjects, advertising messages and the like may be printed on the backing member. The device may be used for other purposes such as games or similar applications.



3,783,542

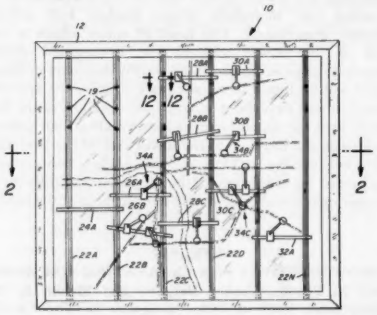
MAP DISPLAY SYSTEM

Coyote Johnson, Tulsa, Okla., assignor to Atkins & Merrill, Incorporated, Tulsa, Okla.

Filed Nov. 10, 1972, Ser. No. 305,217

Int. Cl. G09f *13/04*

U.S. Cl. 40—132 R **8 Claims**



This invention describes an improved type of map display system. It comprises a rectangular framework covered with a sheet of translucent material that is held rigidly in a plane, such that a sheet of photographic material can be adhered to the front surface of the display sheet. Means including a plurality of spaced vertical rails and adjustable horizontal rails attached thereto are provided for holding lamp fixtures which may be positioned on the horizontal rails so that a lamp house can be positioned at any point on the back surface of the display sheet. The lamp fixture is of improved design in that it comprises a system which can be moved vertically or horizontally, and has an arm which rotates about a horizontal axis perpendicular to the display sheet, and a lamp fixture that can be

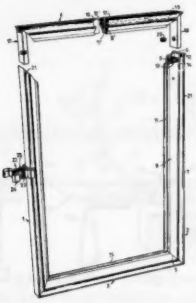
rotated about this arm, and holds a lamp house which can be rotated separately about its axis. The lamp house may include 1, 2 or 4 separate lamp bulbs which can be lighted one or more at a time. The lamp house may also include dividers between the lamps such that the light from one or two or four of the lamps can be directed to separate areas of the display sheet.

3,783,543

FRAME FOR EXCHANGEABLE POSTERS OR THE LIKE

Sven Anders Hemgren, Kungsangen, Sweden, assignor to Dymo Industries, Inc., San Francisco, Calif.

Filed June 21, 1972, Ser. No. 264,997
Int. Cl. G09f *1/12*
U.S. Cl. 40—152 **2 Claims**



The invention concerns a frame for exchangeable posters or the like, normally comprising four frame side bars, the ends of which are pairwise connectable over mitre joints to form said frame. Each such bar contains at least one channel which on all sides is defined by means of substantially continuous walls and extends coextensively along the side of said bar, intended to form one circumferential side of the frame, and also a groove for accommodating one edge of said poster, said groove extending coextensively along the opposite side of the bar. An angle connector is arranged at each corner of the frame, one leg thereof being fully inserted into and secured in said channel of one frame bar forming the corner, whereas the other angle connector leg is fully insertable in the corresponding channel of the other bar of the corner and is releaseably lockable therein.

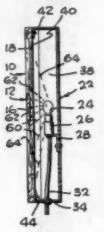
3,783,544

DECORATIVE LAMP ELEMENT AND LAMP

Norman M. Brody, Los Angeles, Calif., assignor to Norman Industries, Inc., Santa Fe Springs, Calif.

Division of Ser. No. 64,533, Aug. 31, 1970, Pat. No. 3,709,766.
This application Aug. 31, 1972, Ser. No. 285,537
Int. Cl. G09f *13/00*
U.S. Cl. 40—152.2 **10 Claims**

Lamp element comprising three dimensional plastic colored article, e.g., reproduction of a cartoon character and the like, in the form of a clear transparent polyester cast resin body having a colored fiber glass paper inlay embedded in the resin, such inlay preferably being a silk screened multicolored configuration, the cast resin body having an external shape corresponding to the external shape of the colored inlay, forming a three dimensional plastic duplicate of the colored inlay having the corresponding coloration and outlines of the colored fiber glass paper inlay, and creating a three dimensional effect to the eye of an observer; and a light translucent polyester resin sheet attached to the rear surface of the colored cast resin body, and preferably extending outwardly therefrom, whereby light from a light source behind such translucent sheet and transmitted diffusely through such sheet to the cast resin body is uniformly transmitted also through such body to light evenly and brightly the entire colored cast resin body, and light transmitted diffusely through the outer portions of said translucent sheet around the colored cast resin body, highlights the colored representation in the brightly lighted colored cast resin body. Preferably, a border area, which may be of decorative design, and formed of an opaque polyester resin, is disposed around the outer edge portions of the translucent resin sheet.



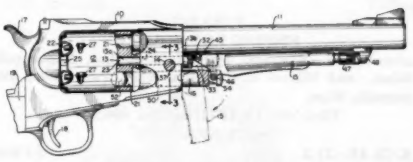
The above lamp element is attached over a front opening in a lamp box containing a lamp such as an electric light bulb, preferably positioned directly behind the colored cast resin body. The result is a brightly colored glass-like appearance of the colored representation in the colored cast resin body highlighted by the light passing through the adjacent portions of the translucent sheet and framed by the decorative border area.

3,783,545

LOADING LEVER ARRANGEMENT FOR MUZZLE LOADING REVOLVER

Harry H. Sefried, II, New Haven, Conn., assignor to Sturm, Ruger & Co., Inc., Southport, Conn.

Filed May 10, 1972, Ser. No. 252,046
Int. Cl. F41c *1/00*
U.S. Cl. 42—61 **9 Claims**

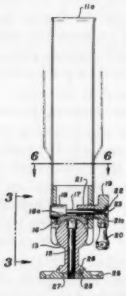


A loading lever arrangement for muzzle loading revolvers comprises a loading lever having an integrally formed transverse pivot pin located adjacent the rearward end of the lever and an integrally formed rammer engaging lug located below the pivot pin, a cylinder base pin having a transverse pivot pin receiving groove formed in the upper surface thereof and a transverse retaining pin receiving groove formed in the lower surface thereof, a base pin retaining pin releasably engaging the cylinder base pin, and a bullet rammer having a T-shaped vertical slot formed in the forward end portion of the rammer. The transverse pivot pin of the loading lever is received in the pivot pin receiving groove of the cylinder base pin, the bullet rammer engaging lug of the loading lever is received in the T-shaped vertical slot of the bullet rammer, and the base pin retaining pin is received in the retaining pin receiving groove of the cylinder base pin. As a result, the cylinder base pin is retained in the frame by the base pin retaining pin, the loading lever is pivotally secured to the cylinder base pin and the bullet rammer is connected to the loading lever.

3,783,546
FISHING LURE RETRIEVER
Duane A. Meyers, 7125 Main St., Trumbull, Conn.
Filed Mar. 15, 1972, Ser. No. 234,706
Int. Cl. A01k *97/00*
U.S. Cl. 43—17.2 **10 Claims**

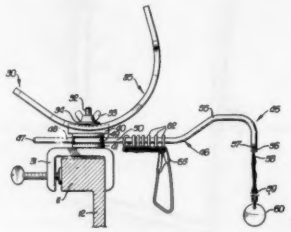
A fishing lure retriever for recovering lures which have become entangled in submerged debris. The retriever comprises a latching member adapted to be applied to a fishing line, and to slide along the line to the lure so as to latch onto the latter. The body of the member has a substantially greater density than that of water, thereby enabling it to readily submerge. The body is provided with a longitudinal slot into which the fishing line can be easily and quickly inserted without requiring that it be broken or cut; thereafter the retriever body is allowed to gravitationally slide downward along the line to the location of the lure. The retriever body is also connected with a recovery line which is fastened to one of its ends. A pair of spring-loaded retractable grippers are disposed at the other end of the body, and have camming surfaces which can engage the usual hollow ball carrying swivel eyes by which the lure is fastened to the line. With the retriever body securely seizing the swivel ball, the lure can now be recovered by merely forcibly pulling on the recovery line.

3,783,547
FISHING ROD HOLDER
Andrew G. C. Bystrom, 4901 Trillium Ln., Minneapolis, Minn., and Mikeal G. Bystrom, 6106 Park Ave., Minneapolis, Minn.
Filed Nov. 13, 1972, Ser. No. 306,367
Int. Cl. A01k *97/10*
U.S. Cl. 43—21.2 **3 Claims**



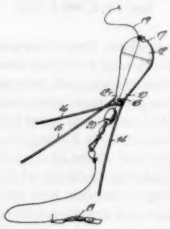
A fishing rod holder arranged to receive the butt end of a fishing rod and including a generally cylindrical tube having a closed bottom and an open top with mounting means at the base thereof to secure said holder to a stationary surface. The mounting means includes a ball, with the base of the tube having a socket formed therein, and with clamping means including a transversely mounted screw and a compression block, being provided at the base of the tube to lockingly retain the tube in predetermined disposition. The screw has relatively movable clamping members mounted thereon to urge the block towards the ball.

3,783,548
FISH CATCH KEEPER
Frank W. Fisher, 27141 13th St., Highland, Calif.
Filed July 5, 1972, Ser. No. 269,282
Int. Cl. A01k *65/00, 97/10*
U.S. Cl. 43—21.2 **6 Claims**



An accessory for water storage of fish caught from a small boat, the device comprising a fish safety pin racking rod fastened to the gunwale and extending outward therefrom with a horizontal portion for racking a multiplicity of pins, the rod arching upwardly and then pointing downwardly at its outer end to retain said pins racked on said horizontal portion, a chain long enough to reach the water being attached to the end of the rod and terminating in a keeper disc preventing the escape of fish holding safety pins threaded on said chain. The rod is optionally welded to a clamp for attachment to the boat gunwale or provided with an eye insertable in a secondary fishing rod holding clamp which in turn has a primary clamp for securing the same to a boat gunwale.

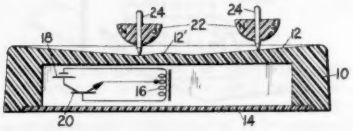
3,783,549
ANTI-SNAGGING FISHING GEAR
W. Kenneth Griggs, Champaign, Ill., assignor to The Raymond Lee Organization Inc., New York, N.Y.
Filed Oct. 20, 1971, Ser. No. 190,953
Int. Cl. A01k *85/04, 95/00*
U.S. Cl. 43—42.4 **3 Claims**



A device for use with fishing tackle to prevent snagging and loss of fishing lures and sinkers. The device consists of a curved flat runner fastened to three trailing legs of stiff wire.

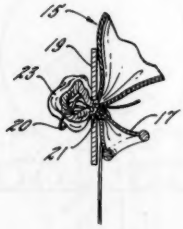
The fishing line is threaded through eyes at the head and tail of the runner and then fastened to the lures and sinker. In operation the tripod configuration of the three trailing wires guides the curved runner to ride over and around underwater obstructions including rocks, weeds and underwater tree limbs.

3,783,550
NOVELTY ELECTRIC MOTOR
Roger Wayne Andrews, 4190 Oakman St., South, Salem, Oreg.
Filed Apr. 21, 1972, Ser. No. 246,454
Int. Cl. A63h *33/26*
U.S. Cl. 46—45 **14 Claims**



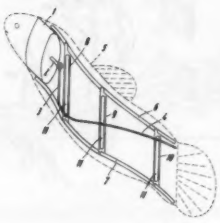
A permanent magnet armature is arranged to be moved initially in spaced proximity to an induction coil connected in an electric circuit including a source of electric potential and an electronic switch such that when the moving magnetic field of the magnet cuts the coil turns the resulting induced current operates the switch momentarily to connect the source of electric potential across the coil. The resulting current flow through the coil produces a magnetic field which is imposed upon the moving magnet such as to accelerate its movement. The magnet may take many forms, such as a spinning top, a motor rotor, a pendulum or other reciprocating member, and others.

3,783,551
BALLOON AND SEALING MEANS THEREFOR
Rudolph L. Allison, and Gary L. Lindstrand, both of Rockford, Ill., assignors to MTL Incorporated, Rockford, Ill.
Division of Ser. No. 133,143, April 12, 1971, Pat. No. 3,720,991. This application Aug. 28, 1972, Ser. No. 284,233
Int. Cl. A63h *3/06*
U.S. Cl. 46—90 **3 Claims**



An inflatable balloon is sealed gas-tight by an apertured disc which pinches together a doubled-over section of the neck of the balloon. A string optionally may be attached to the neck by the same disc.

3,783,552
DRIVING APPARATUS, ESPECIALLY FOR A FLOATING TOY
Wend Goldbach, Muehlheim am Main, Germany, assignor to Erika Goldbach, Muehlheim am Main, Germany
Filed Sept. 28, 1972, Ser. No. 292,969
Claims priority, application Germany, Sept. 30, 1972, P 21 48 789.8
Int. Cl. A63h *23/10*
U.S. Cl. 46—92 **8 Claims**



The present driving apparatus is especially suitable for floating toys having a flexible skin. The driving apparatus imparts a wriggling or serpent like motion to the skin by means of a coiled member having a coiling extending at least over 180°. The skin is supported on flexible upper and lower longitudinal ribs and on cross ribs connected to said longitudinal ribs. The cross ribs have guide slots therein through which the coiled member extends. The coiled member is cranked by a motor, for example, a spring motor or an electric motor.

3,783,553
BLANK-FACED CHILDS DOLL
Murray Goozner, 642 Diane Pl., North Woodmere, N.Y.
Filed July 26, 1972, Ser. No. 275,441
Int. Cl. A63h *13/00*
U.S. Cl. 46—116 **7 Claims**

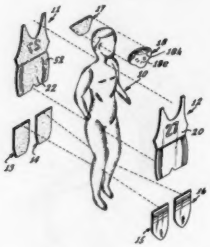
A doll assembly includes a stuffed doll body having a plastic blank face portion of a single uniform color secured to the doll head. The face portion is devoid of facial features and is formed with slight concave depressions suggesting the location of eyes and a mouth. The surface of the blank face portion is made to accept the markings of crayons or similar non-permanent drawing materials, whereby the child user may draw selected facial features thereon. A garment is provided having pockets for storing the crayons or drawing materials, and a wiping cloth for removing the drawn features when desired.

3,783,554

APPLIABLE DOLL DECORATIONS

Wallace H. Shapero, El Toro, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 4, 1972, Ser. No. 223,586
Int. Cl. A63h 13/00
U.S. Cl. 46—116 6 Claims



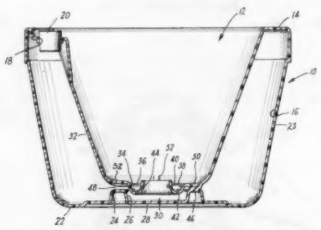
A doll construction kit which enables a child to mold a three-dimensional doll and decorate it will preprinted labels so that the doll has an attractive appearance similar to that of a doll wholly constructed at a factory. Preprinted labels defining clothing and defining facial and hair features are provided for application by a child to a doll he has molded, the labels being constructed of a rubber-like material so they can stretch when applied to a contoured doll surface, to eliminate wrinkles. They will also stretch when doll is posed in various positions.

3,783,555

SELF-WATERING FLOWER POT

James R. Peters, Chicopee, Mass., assignor to Universal Products Development Corporation, Simsbury, Conn.

Filed Jan. 3, 1972, Ser. No. 214,764
Int. Cl. A01g 27/00
U.S. Cl. 47—38 10 Claims



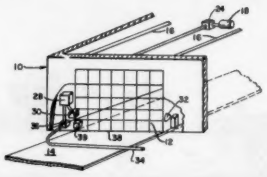
A self-watering flower pot has a unitary, double-walled construction comprising an outer shell, a potting receptacle therewithin, and a water-receiving chamber in the space between the outer shell and the inner receptacle. An upwardly opening recess is defined in the upper surface of the bottom wall of the outer shell, and the potting receptacle has a depending peripheral wall element which extends about a passageway through a lower portion thereof and is disposed with its lower edge within the recess of the bottom wall. In operation a vacuum is created in the space between the double walls, which is relieved when the soil within the potting receptacle becomes sufficiently dry to permit air to permeate and pass outwardly into the chamber. This effectively meters the water by allowing a small amount to flow as dictated by the dryness of the soil. The elements in the lower portion of the flower pot trap the soil and thereby eliminate the need for a porous plug of the type which is normally used for that purpose at such a water/soil interface.

3,783,556

DOOR CONTROL SYSTEM PROVIDING AUTOMATIC DELAYED DOOR REVERSAL

John F. Cook, Milwaukee, Wis., assignor to Telectron, Inc., Fort Lauderdale, Fla.

Filed July 13, 1972, Ser. No. 271,511
Int. Cl. E05f 15/16
U.S. Cl. 49—25 8 Claims



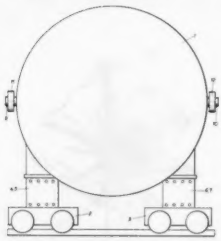
A door control system for controlling a door which is operated by an instantaneously electrically reversible motor is disclosed. When a door open sensor is actuated while the door is closing, the control system stops the door and after a predetermined delay energizes the motor to reopen the door fully. If an emergency reverse sensor is actuated while the door is closing, the drive motor is instantaneously reversed to stop the door in a minimum time and immediately reopen it.

3,783,557

CLOSURE MEANS FOR VACUUM CHAMBERS

Manfred Heiland, Hahn/Pfungstadt, Germany, assignor to Firma Carl Schenck GmbH, Darmstadt, Germany

Filed Oct. 20, 1971, Ser. No. 190,801
Claims priority, application Germany, Aug. 14, 1971, P 21 40 880.0
Int. Cl. E05d 15/10
U.S. Cl. 49—221 5 Claims



The present closure means, such as a gate for vacuum chambers, is movably supported in front of an opening of such a vacuum chamber on a carriage by means of flat or leaf springs which permit a movement of the gate toward and away from said opening.

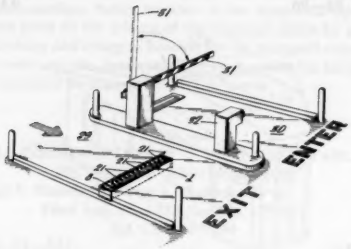
3,783,558

DIRECTIONAL TRAFFIC CONTROL DEVICES

Frederic R. Keator, Bryn Mawr, Pa., assignor to Auto Parks, Incorporated, Devon, Pa.

Filed Jan. 17, 1973, Ser. No. 324,501

U.S. Cl. 49—49 **3 Claims**



Traffic direction control device for automobile roadways normally operable to permit automobile traffic in one direction and prevent such travel in the opposite direction comprising an enlongated casing adapted to be recessed in a roadway transversely thereof and having a top plate supported substantially flush with the surface of the roadway. A shaft is supported longitudinally within the casing and a plurality of prong assemblies is provided each having a helical spring portion mounted on the shaft and provided at one end with a prong portion projecting angularly upward through a slot in the top plate inclined in the direction from which automobile traffic is to be prevented, the other ends of the spring portions of the prong assemblies being connected to a common tie bar extending longitudinally within the casing. A fixed support member is mounted in underlying engagement with the helical spring portions of the prong assemblies to prevent downward deflection and deformation of the assemblies and shaft as a result of impact engagement of the projecting prong portions by the tires of automobiles moving in the direction in which traffic is to be prevented by the device.

3,783,559

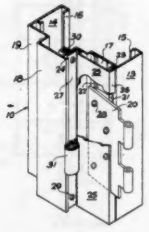
DOOR FRAME ASSEMBLY

Norman E. Yocum, Salem, Ohio, and Frank H. McIntyre, Jr., New Castle, Pa., assignors to Superior Industries, Inc., Youngstown, Ohio

Filed May 5, 1972, Ser. No. 250,794

Int. Cl. E06b *1/04*

U.S. Cl. 49—504 **Claims**



A door frame assembly formed of frame members including web portions to which hinge butts and striker plates can be secured in desired position together with cover members releasably mounted on the frame members in a position to cover the web portions and the hinge butts secured thereto.

3,783,560

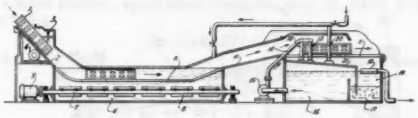
APPARATUS FOR WASHING PACKING CASES

Gherasim Casapopol, and Napoleon Iaru, both of Galati, Romania, assignors to Intreprinderea Judeteana De Morarit Si Panificalie, Galati, Romania

Filed June 28, 1971, Ser. No. 157,090

Int. Cl. B24b *31/00*

U.S. Cl. 51—5 **5 Claims**



An apparatus for washing packing cases and delivery trays, e.g., for baked goods has a downwardly sloping trough leading onto a grate in a receptacle filled with a detergent solution in which sand is suspended. A rotating shaft carrying a plurality of axially-spaced blades is provided in the receptacle below the grate for agitating the solution and cleaning the cases which are immersed therein. From the grate each case is pushed by the following case up a second chute and onto a second grate above which a plurality of nozzles are provided which spray the washed crate with recycled rinse water from which the sand has been separated, with the further upstream spray ejecting clean fresh water.

3,783,561

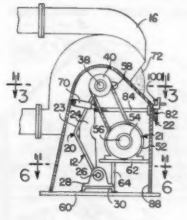
CONSTANT SURFACE SPEED GRINDER

Anthony C. Fortunski, Grosse Pointe Park, Mich., assignor to Fargo Machine & Tool Company, Detroit, Mich.

Filed May 26, 1972, Ser. No. 257,342

Int. Cl. B24b *47/18*

U.S. Cl. 51—134.5 R **14 Claims**



A grinding wheel spindle pivoting bracket unit provides elements for effecting delivery of a constant wheel peripheral speed as the wheel diameter becomes progressively reduced. The position of the wheel spindle is adjusted by pivoting the bracket unit, upon which the spindle is mounted, in a direction toward the work-supporting table of the grinding machine. The bracket unit is pivotally mounted in bearings affixed to the machine. The grinding wheel spindle is fixedly secured to the bracket unit in a position whereby the peripheral edge of the grinding wheel is disposed closely adjacent and in operative relationship to a work table mounted upon the machine housing at a level reasonably comfortable for the machine operator. As the grinding wheel wears and gradually decreases in diameter, the pivoting bracket is adjustably pivoted forward so that the center distance between the driven spindle pulley

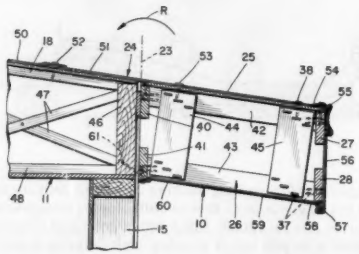
and the driving self-adjusting motor pulley is decreased, allowing the drive belt therebetween to assume an adjusted position, and thus maintain a substantially constant peripheral edge surface speed.

3,783,562

FOLD DOWN EAVE FOR MOBILE HOME

Edward M. Eysenring, Camarillo, Calif., assignor to Dual-Wide, Inc., Oxnard, Calif.

Filed Oct. 14, 1971, Ser. No. 189,089
Int. Cl. E04b *7/16*
U.S. Cl. 52—69 **3 Claims**



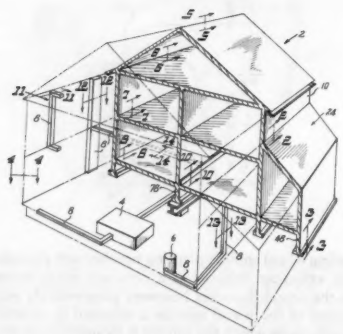
A mobile home is equipped along an upper portion with a movable eave that is capable of being swung between a functional extended position and an in-transit retracted position on top of the roof. The eave and mobile home upper portion are interconnected by a flexible sheet that bends as the eave is being swung between its extreme positions.

3,783,563

PREFABRICATED BUILDING COMPONENTS

Clyde Maurice Moore, Richmond, Va., assignor to Moorex Industries Inc., Richmond, Va.

Filed July 6, 1971, Ser. No. 160,037
Int. Cl. E04b *1/14;* **E04c** *1/10*
U.S. Cl. 52—11 **13 Claims**



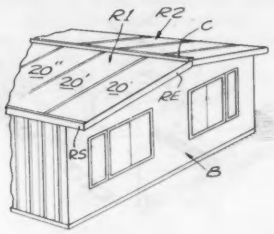
Prefabricated building construction using panel and connector modules formed of molded plastic material reinforced with glass fibers. The connector modules are elongated beam-like members having longitudinally extending open channels adapted to receive complementary ribs on the edges of generally flat panel modules. The connector modules permit the assembling of panels in any desired angular relationship and are provided with interior passageways constituting conduits for electrical wiring, heating, water and waste facilities.

3,783,564

ROOF LOCK ASSEMBLY WITH EAVE STRUCTURE

R. S. Dunn, 200 S. Occidental, Los Angeles, Calif., and William J. Rife, 4142 W. Whitten, Phoenix, Ariz.

Division of Ser. No. 148,470, June 1, 1971, Pat. No. 3,729,884. This application Oct. 13, 1972, Ser. No. 297,269
Int. Cl. E04b *7/00*
U.S. Cl. 52—96 **4 Claims**



A method of roof construction in which a flexible roof cover sheet is placed over the upper surface of a roof frame and is attached to that upper surface at points spaced inwardly from its outer edge, an elongated roof lock member is positioned adjacent the outer edge of the roof frame, the cover sheet is extended out over the upper surface of the roof lock member, the cover sheet is attached to the upper surface of the roof lock member at various points spaced along the length of the member, the outer longitudinal edge of the member is rotated downwardly so as to stretch the cover sheet in a lateral direction, and then the roof lock member is rigidly fastened in its rotated position so as to maintain the lateral tension in the cover sheet.

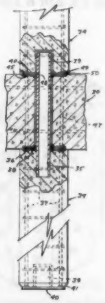
Apparatus for carrying out the forgoing method, including a roof lock member which is formed as an aluminum extrusion, the outer surface of one longitudinal edge of the extrusion being rounded to provide a pivotal bearing upon the roof frame edge, and the extrusion being hollow adjacent its rounded edge so as to receive a wooden insert member for purpose of attachment of the cover sheet.

3,783,565

BUILDING CONSTRUCTION AND COMPONENTS THEREOF

John K. Hughes, Hunnewell Rd., Scarboro, Maine

Division of Ser. No. 836,782, June 26, 1969, Pat. No. 3,594,971. This application May 13, 1971, Ser. No. 143,086
Int. Cl. E04b *1/00;* **E04c** *1/10, 3/34*
U.S. Cl. 52—127 **6 Claims**



Building constructions are disclosed in which the framework comprises preformed, reinforced concrete

columns, beam modules having angularly disposed beam portions, and intermediate beam members. Means are provided to interconnect the reinforcements of vertically aligned columns through the module supported by one column and in support of another column. The beam portions and the beam members include end plates secured to their reinforcements, the end plates including complemental structure enabling each intermediate beam member to be supported by beam portions prior to the joining of the engaged plates by a weld. The modules and columns provide for the marginal support of wall panels and the beam portions of the modules have marginal shoulders for support of floor structure.

3,783,566

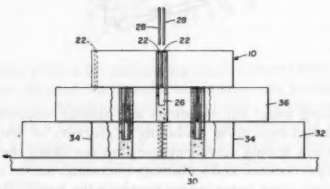
WALL CONSTRUCTION BLOCKS AND MORTARLESS METHOD OF CONSTRUCTION

Richard F. Nielson, 925 Bertch, Waterloo, Iowa

Filed Aug. 10, 1972, Ser. No. 279,492

Int. Cl. E04c *2/46*

U.S. Cl. 52—232 **4 Claims**



A mortarless system for constructing a wall from masonry blocks. Each block is coated on its top, bottom, and ends with a material having a relatively low melting point. Each block also has multiple vertical openings, one of which contains a connecting rod held in place by a material, such as wax, having a very low melting point. The blocks are put into place to erect the wall, and then heat is applied to melt the substances which will fuse the blocks together and allow the connecting rods to drop into the blocks in the next lower course to further interlock the individual blocks and form a solid stable wall.

3,783,567

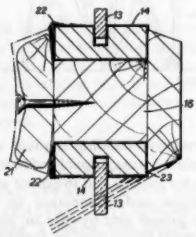
GLAZING STRIP

William J. B. Ollis, Haddenham, England, assignor to Timber Research and Development Association, Wycombe, England

Continuation of Ser. No. 831,407, June 9, 1969, abandoned. This application Feb. 5, 1971, Ser. No. 113,063

Int. Cl. E04c *2/04;* **E06b** *1/08*

U.S. Cl. 52—232 **10 Claims**



This invention is a grooved glazing strip of non-combustible, poor heat-conducting material for enabling a glazed timber panel to have good resistance against fire spreading from one side to the other. The glazing strip can prevent heat being convected through the panel and may have a coating which expands when heated to seal any gaps which appear following distortion or burning of the timber.

3,783,568

AUTOMOTIVE WINDOW ASSEMBLY AND PROCESS

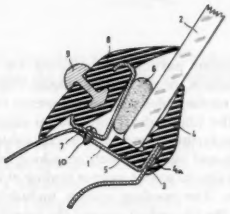
Jurgen Adler; Karl Erck, both of Wolfsburg; Horst Klebba, Weyhausen; Wolfgang Kramer, Ribbesbuttel; Ernst Maneck, Tappenbeck; Hans Mueller-Eckhardt, and Kurt Schwenk, both of Wolfsburg, all of Germany, assignors to Volkswagenwerk Akt, Wolfsburg, Germany

Filed May 21, 1971, Ser. No. 145,764

Claims priority, application Germany, May 21, 1970, P 20 24 753.4

Int. Cl. B60j *1/00*

U.S. Cl. 52—400 **5 Claims**



An automotive window assembly is constructed by gluing a windowpane to an auxiliary frame at a location remote from the automobile and thereafter attaching the auxiliary frame to a primary frame on the automobile.

3,783,569

BUILDING CONSTRUCTION FOR FORMING A CEILING FLOOR

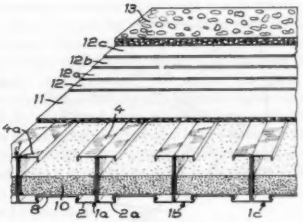
Yvonne Henriette Roussin, 81 Boulevard Soult, Paris, France

Filed June 21, 1971, Ser. No. 155,116

Claims priority, application France, June 29, 1970, 7024059

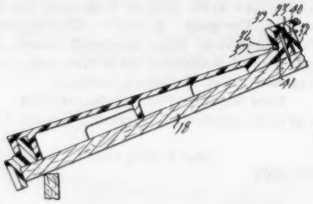
Int. Cl. E04b *5/52*

U.S. Cl. 52—480 **3 Claims**



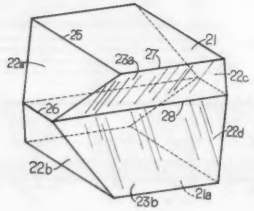
A building construction suitable for forming ceiling floor and wall structures comprises spaced pairs of profiled members, each pair consisting of two U-shaped or channel section members arranged back-to-back with their bases adjacent so as to form an I-section member. The profiled members have flanged webs forming edges against which rest intermediate members located between successive pairs of profiled members.

3,783,570
ROOFING SYSTEM
Harold A. Storch, 31819 Mayfair Ln., Birmingham, Mich.
Filed Sept. 21, 1971, Ser. No. 182,361
Int. Cl. E04d 1/08, 1/34
U.S. Cl. 52—520 15 Claims



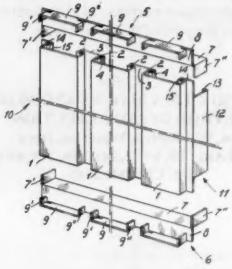
A roofing system particularly adapted for roofs having eaves, gables, valleys, peaks and/or ridges. The system comprises identical roofing tiles with novel means for sealing and fastening both the longitudinal and lateral edges of adjacent tiles. The system further comprises special gable end sections and valley, ridge and hip peak sections which interfit with the aforementioned tiles to assure proper sealing at hip peaks, valleys and ridges. The roofing system includes filler pieces fabricated from the tiles which permit the length of a roof portion to be independent of the tile size. Also included are various eave edge strips which interfit with the tiles and may incorporate drip caps, facia boards and gutters. Further shown is a vent stack formed integrally with the tile to eliminate leakage potential and having a flexible connection to a conduit from a gaseous fluid source.

3,783,571
BUILDING UNIT
Eugene A. Horvath, 1121 Cosper Pl., Rockford, Ill.
Filed June 24, 1971, Ser. No. 156,377
Int. Cl. E04c 1/04, 1/30
U.S. Cl. 52—575 1 Claim



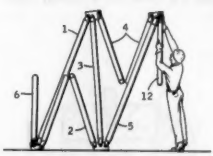
A building unit adapted to interfit various different relationships with like units in a building system in which the building unit is a ten faced polyhedron having two rectangular faces, two pair of outwardly converging isosceles trapezoid end faces at opposite ends of the unit, and two pairs of isosceles trapezoid side faces at opposite sides of the unit converging inwardly at an angle corresponding to the angle of the outwardly converging end faces.

3,783,572
FACING PANEL
Francesco Sironi, Via Plinio 63, Milan, Italy
Filed July 2, 1971, Ser. No. 159,372
Claims priority, application Italy, July 7, 1970, 27098 A/70
Int. Cl. E04c 2/28
U.S. Cl. 52—599 7 Claims



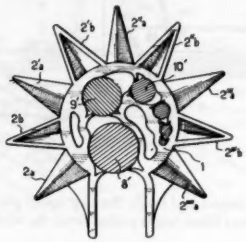
A facing panel for buildings and similar structures comprises a lost-type form including a plurality of longitudinal staves each having stave engaging means along the longitudinal edges thereof, and a plurality of counter-staves each having counter-stave engaging means along the longitudinal edges thereof. The stave and counter-stage engaging means are adapted to mate with and engage one another. The lost-type form further includes a suitable decorative covering on a front side thereof and containing means on a rear side thereof. A hardened material occupies the containing means and anchoring means are provided for fastening the hardend material to the lost type-form.

3,783,573
EXPANDABLE TRUSS STRUCTURE
Desmond H. Vaughan, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.
Filed Dec. 7, 1972, Ser. No. 313,039
Int. Cl. E04h 12/18
U.S. Cl. 52—646 16 Claims



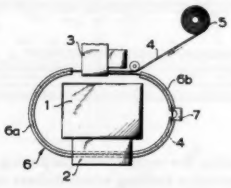
A standard structural building module which is a three-dimension triangulated truss, capable of being retracted into a compact package for storage and shipment and then expanded on site for erection and connection to similar modules. Modules may be joined side-by-side or end-to-end to construct many structural forms such as, for example, a bridge in the horizontal orientation or a tower in the vertical orientation. A structure may be sized to support any magnitude or mode of loading by adding modules until adequate strength is attained.

3,783,574
CENTERING BLOCK FOR POSITIONING REINFORCEMENT IRON PIECES
Giuseppe Cennerelli, 8, Cite Jean Grenmillon, Bobigny, France
Filed Jan. 6, 1972, Ser. No. 215,800
Claims priority, application France, Jan. 6, 1971, 7100230
Int. Cl. E04c 5/16
U.S. Cl. 52—687 3 Claims



A centering block for positioning reinforcement iron pieces, in a mould adapted for manufacturing concrete building elements, the said block comprising a circular plastic member provided with a central channel and with peripheral radially arranged branches, the said channel forming a plurality of recesses of decreasing sizes adapted for lodging iron pieces of different sizes.

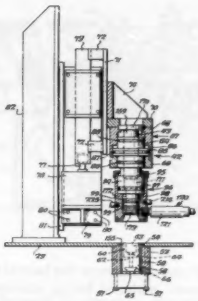
3,783,575
METHOD OF AND APPARATUS FOR STRAPPING AND LABELING OF OBJECTS
Jacob Anton Angenendt, Obersasbach, Germany, assignor to Hoesch Aktiengesellschaft, Dartmund, Germany
Filed Apr. 19, 1972, Ser. No. 245,402
Claims priority, application Germany, Apr. 21, 1971, P 21 19 385.1
Int. Cl. B65d 15/00
U.S. Cl. 53—3 10 Claims



A strapping tape is guided in a predetermined path about the circumference of an object to be packed, and across its path there is placed a label having one or two openings through which the advancing tape is guided, whereupon the tape on completion of its encirclement of the object, is tightened and secured.

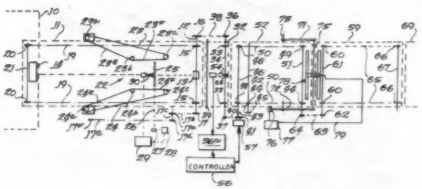
3,783,576
METHOD AND APPARATUS FOR FILLING AND SEALING CONTAINERS
James H. Riesenberg, Amherst, and Joseph M. Rait, Buffalo, both of N.Y., assignors to Pelorex Corporation, Buffalo, N.Y.
Filed Feb. 7, 1972, Ser. No. 223,842
Int. Cl. B65b 31/02
U.S. Cl. 53—7 20 Claims

An apparatus and method for charging an aerosol container with propellant through an open end thereof beneath the container closure member. The propellant filling head includes a



closure applying assembly for sealing the closure member to the container after the propellant filling operation.

3,783,577
SYSTEM FOR PACKING FOOD PATTIES
Orlie E. Knutson, Downers Grove, Ill.; Louis E. Gernandt, and Arthur J. Charmoli, both of Eau Claire, Wis., assignors to Armour and Company, Chicago, Ill.
Filed June 24, 1971, Ser. No. 156,324
Int. Cl. B65b 57/12
U.S. Cl. 53—24 28 Claims

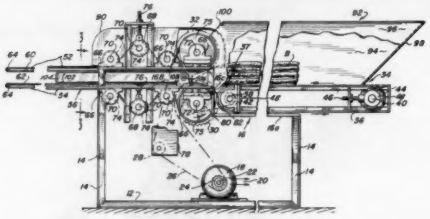


Individual meat patties are deposited on an endless conveyor belt. The patties are formed into individual drafts. Each draft is then conveyed along the belt, and compacted sideways as well as longitudinally. The compacted drafts are then fed onto a sheeting conveyor lined with a continuous plastic film fed onto the conveyor by powered feed rolls. The drafts hold the continuous film in frictional engagment with the sheeting conveyor which runs slightly faster than the film is being paid out to keep the film taut. The drafts are then fed onto a separator conveyor moving at a slightly higher speed. After a draft is fully deposited onto the separator conveyor at determined by sensing fingers, the film is cut between drafts so that the separated draft travels faster than the web and is further separated from a subsequent draft to facilitate removal of that draft at a final packing conveyor section from which the drafts are placed in cartons.

3,783,578
MATERIAL GUIDE MEMBERS FOR A COMPRESSING AND CONVEYING APPARATUS
Arnold L. Willis, Chicago, and Harold Wortman, Morton Grove, both of Ill., assignors to MSL Industries, Inc.
Division of Ser. No. 844,348, July 24, 1969. This application Mar. 7, 1972, Ser. No. 232,380
Int. Cl. B65b 63/02
U.S. Cl. 53—24 1 Claim

An apparatus having aparallel, spaced apart belt conveyors

and a hopper used in conjunction therewith and provided with a pair of flexible spaced apart material guide members positioned inwardly of and adjacent to the lateral edges of the belt conveyors to prevent material being conveyed by the conveyors from becoming entangled therewith.



3,783,579

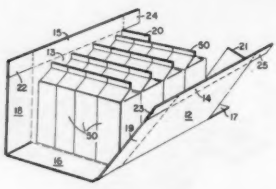
METHOD OF PACKAGING CONTAINERS IN A CARTON BLANK

William J. Howe, Los Altos, Calif., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Division of Ser. No. 883,216, Dec. 8, 1969, Pat. No. 3,704,823. This application Sept. 1, 1972, Ser. No. 285,815

Int. Cl. B65b *43/00, 63/00*

U.S. Cl. 53—24 **9 Claims**



A method of packaging a plurality of containers in a carton blank having a bottom wall portion, two opposite side wall portions, opposite front and rear walls, and top wall portions. First, one side wall portion is erected by folding it ninety degrees relative to said bottom wall portion, and the other side wall portion is partially erected. Next a plurality of containers are placed on the bottom wall and snugly against the erected side wall portion, so as to occupy substantially fully the area of the bottom wall and to extend up nearly but not quite for the distance between the widthwise fold lines of the fully erected side wall portion. Then, the other side wall portion is fully erected until it bears snugly against the containers, so that the two side walls squeeze the containers against each other. The front and rear walls are then erected so that they act to squeeze said containers against each other, the top wall portions are folded to a horizontal position, and the walls are secured together.

3,783,580

CLOSE FITTING ARTICLE PACKAGING SYSTEM

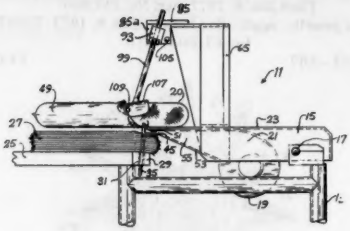
Vytas Andrew Raudys, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Filed Oct. 10, 1972, Ser. No. 295,949

Int. Cl. B65b *43/36*

U.S. Cl. 53—29 **8 Claims**

Stacked wicketed flexible bags are air-opened sequentially one at a time at a packaging station, product being packaged is directed into each bag under a pendant product-contoured guide which shapes and holds the bag upper ply and the closely fitted product filled bag is pulled from the wicket.



3,783,581

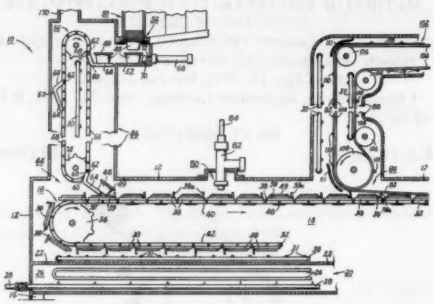
ASEPTIC PACKAGING METHOD AND MACHINE

Joseph E. Pierce, Allentown, Pa., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Apr. 18, 1972, Ser. No. 245,112

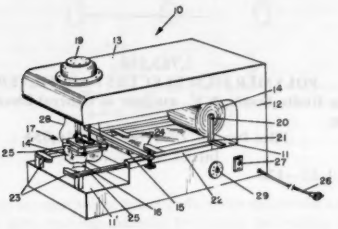
Int. Cl. B65b *31/02*

U.S. Cl. 53—37 **27 Claims**



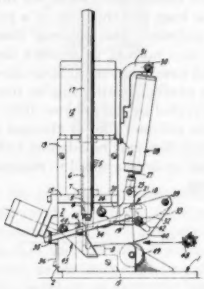
An apparatus for aseptically packaging food and other products includes a housing which defines an enclosed sterile chamber and contains an endless conveyor having an upper flight adapted to transport individual containers through a plurality of operating stations. The housing is formed with a container sterilization section located adjacent one end of the conveyor and has a container dispenser mechanism mounted therein which holds individual containers in this section for a predetermined period of time and thereafter dispenses the containers on the upper flight of the conveyor; the latter transports the containers to a filling station where a sterile product is placed in the container. Downstream of the filling station, a continuous strip of interconnected covers is sequentially advanced, through a cover sterilization section formed in the housing, into position in registry with the containers on the conveyor. Thereafter, the covers are heat sealed to the containers and discharged from the housing. The entire sterile chamber is supplied with a sterile atmosphere at a pressure above atmospheric pressure to maintain the containers and covers in a sterile condition during the filling and cover sealing operation.

3,783,582
SHRINK-FILM CAPPING MACHINE
Ernest Willvonseder, 530 Shore Arris Dr., Mamaroneck, N.Y.
Filed Nov. 30, 1972, Ser. No. 310,978
Int. Cl. B65b *7/28*
U.S. Cl. 53—67 **8 Claims**



An automatic shrink-film capping machine for forming and applying caps of shrink-film to the open mouths of containers. This device comprises means to advance, cut and position a sheet of shrink-film over the top of a container. A positioned sheet is engaged by a capper head which is lowered relative to the sheet and container whereby heating elements, disposed therein are moved radially inwardly and contact the shrink-film and container to form a heat shrunk cap thereover.

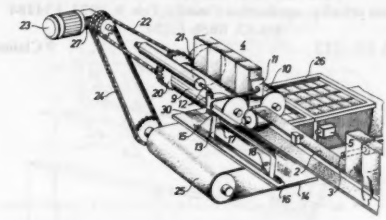
3,783,583
GATHERING MEANS FOR CLIPPERS
Arnold E. Dobbert, Fremont, Calif., assignor to Rheem Manufacturing Company, New York, N.Y.
Filed Sept. 22, 1972, Ser. No. 291,334
Int. Cl. B65b *13/20*
U.S. Cl. 53—138 A **5 Claims**



Gathering means adapted to be employed with a clipping device which applies a sealing clip to the mouth of a flexible bag or like container. The gathering device compresses the material simultaneously in two directions substantially at right angles to each other to optimize the sealing effect.

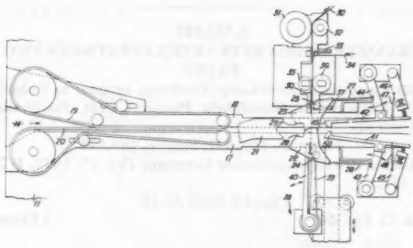
3,783,584
DEVICE FOR THE PLACING OF PACKAGES INTO A COLLECTING CARTON
Jan Axel Ingemar Rauser, Lomma, Switzerland, assignor to Tetra Pak International AB, Lud, Sweden
Filed Aug. 14, 1972, Ser. No. 280,179
Int. Cl. B65b *35/46*
U.S. Cl. 53—160 **3 Claims**

A device for depositing groups of packages into a collecting carton in which successive groups of packages are delivered from a conveying belt to and between a pair of spaced rollers having ledges for receiving the group of packages and when



said rollers are rotated in opposite directions the group of packages is lowered into a collecting carton and the sequence of steps is repeated until the carton is filled.

3,783,585
MACHINE FOR CLOSING FILLED BAGS
Trevor Hoyland, Norwich, England, assignor to Thurme Engineering Company Limited, Norwich, Norfolk, England
Filed Sept. 18, 1972, Ser. No. 289,867
Int. Cl. B65h *13/16*
U.S. Cl. 53—198 A **8 Claims**



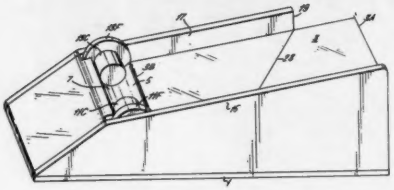
A machine for closing the open ends of filled bags which are conveyed through the machine by a conveyor comprises a guide for receiving the open end part of each filled bag as it is moved through the machine, a stop which is movable between a retracted position and an advanced position in which it extends into the path of the end part of the bag as this moves along the guide, a follow-up member which is moved along the guide following the bag to compress the open end part of the bag against the stop which then moves towards the retracted position as the compressed end of the bag is moved further along the guide, means for supplying a length of adhesive strip and holding it across the path of the compressed part of the bag as this moves further along the guide and means for clamping the adhesive strip around the compressed end part of the bag to close the bag, the clamping means subsequently releasing the closed end of the bag to allow it to be moved by the conveyor out of the guide. Preferably the stop comprises a pair of contra-rotatable members which are pivotable between the advanced and retracted positions and these members are biassed by a spring into the advanced position and are moved to the retracted position by the pressure against them of the compressed end of the bag.

3,783,586

COIN WRAPPING DEVICE

Patrick Steven Dorman, 37 Exhibition St., Truro, Nova Scotia, Canada

Filed May 8, 1972, Ser. No. 251,058
Claims priority, application Canada, Feb. 9, 1972, 134284
Int. Cl. B65b *11/04*
U.S. Cl. 53—213 **9 Claims**



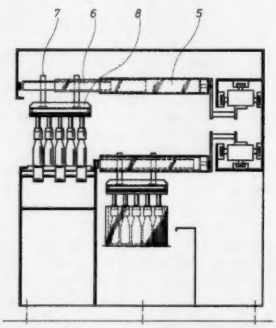
A coin wrapping device comprises a flat surface of a width greater than the length of a desired pack of coins and merging into a depression having a part-cylindrical surface. A sheet of coin wrapping material is laid on these surfaces and over a stack of coins arranged on their sides in the depression, at each end of which is provided a roller which can roll in contact with the part-cylindrical surface and the flat surface during a coin wrapping operation in which the stack of coins and the rollers move together out of the depression and along the flat surface. Outward movement of the two rollers is prevented, so that the number of coins of a given denomination which can be inserted into the depression between the two rollers is determined by the dimensions of the rollers.

3,783,587

TRANSFER OF DISCRETE ARTICLES BETWEEN TWO PATHS

Willi Kurtenbach, Klothkamp, Germany, assignor to Holstein & Kappert Maschinenfabrik Phonix GmbH, Dortmund, Germany

Filed Oct. 18, 1971, Ser. No. 189,998
Claims priority, application Germany, Oct. 17, 1970, P 20 51 139.1
Int. Cl. B65b *21/18*
U.S. Cl. 53—247 **5 Claims**



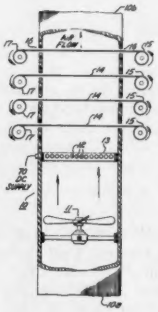
A method and apparatus are disclosed for transferring discrete articles between two paths, in particular for casing or uncasing of articles such as bottles. The articles are advanced in groups in a first path, either in a case or without a case, and when they reach a transfer station all articles of a respective group are engaged and raised and at the same time moved laterally for deposition in another path. If the articles are originally in a case they are removed and deposited in the other path in uncased condition, or if the articles are originally in uncased condition they are moved to the other path and deposited in a case.

3,783,588

POLYMER FILM ELECTRET AIR FILTER

Martin Hudis, Scotia, N.Y., assignor to General Electric Company

Filed Dec. 20, 1971, Ser. No. 210,054
Int. Cl. B03c *3/28*
U.S. Cl. 55—126 **3 Claims**



A duct for the transmission of an air flow therethrough is provided with at least one thin film of a permanently electrically charged polymer. The polymer film electret may be oriented in the duct normal, or at some desired angle, to the air flow in which case it has small holes formed therethrough, or it may be in parallel relationship to the air flow. Electrostatic fields generated by the polymer film cause electrostatic collection on the polymer film of charged particles in the air flow. The polymer film may be adapted to be constantly moving and be rolled up onto a spool to maintain a constant efficiency of filtering.

3,783,589

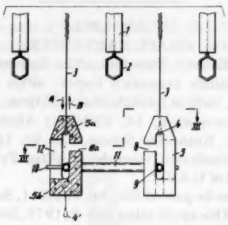
CORONA-DISCHARGE ELECTRODE SYSTEM

Dietrich Ertl, Konigstein; Horst-Gunter Eishold, Frankfurt am Main; Helmut Gilles, Bergen-Enkheim; Gunther Schmolling; Walter Steuernagel, both of Frankfurt am Main, and Jurgen Nitz, Neu Isenburg, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed July 9, 1971, Ser. No. 161,070
Claims priority, application Germany, July 13, 1970, P 20 34 628.5
Int. Cl. B03c *3/41*
U.S. Cl. 55—146 **13 Claims**

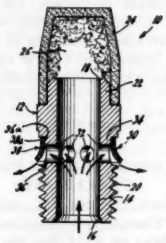
A corona-discharge electrode system, especially for electrostatic precipitators and similar devices for the electrostatic separation of particles from a fluid stream, wherein the electrodes are secured to an upper carrying structure and a lower spacing structure. The electrodes, which are suspended from

the upper structure, positively engage the same, e.g., via hooks, eyes or a clamping connection. Tensioning weights of a nonconducting material, preferably waterproof concrete, are



removably secured to the lower ends of the electrodes and are provided with openings adapted to receive the spacing structure.

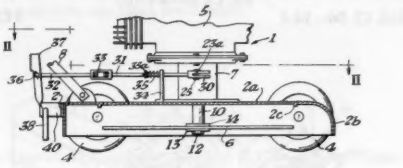
3,783,590
FILTER-SILENCER FOR PNEUMATIC DEVICES
Alton K. Allen, 11 Flower Ln., Kings Point, N.Y.
Filed July 9, 1970, Ser. No. 53,564
Int. Cl. B01d *46/42*
U.S. Cl. 55—310 **6 Claims**



A filter-silencer for pneumatic devices such as air valves, cylinders and the like of the type including a porous filter of a sintered metallic mass wherein, upon clogging of the filter and reduction of the air flow through the exhaust port for the corresponding air device, an auxiliary exhaust path is established which precludes the build-up of excessive back pressures in the pneumatic device and which also provides an audible warning signal indicating the need for servicing of the filter-silencer to restore the porous filter to its normal and intended functional state.

3,783,591
POWER MOWER SAFETY MECHANISM
John B. Sotak, 122 Church Rd., Irwin, Pa., and Harold A. Williamson, 559 Idlewood Rd., Penn Hills Township, Allegheny County, Pa.
Filed Dec. 23, 1971, Ser. No. 211,385
Int. Cl. A01d *53/00*
U.S. Cl. 56—10.2 **12 Claims**

This disclosure relates to a rotary type of lawn mower having a skirted housing, a power motor mounted on the housing, a rotary grass cutting blade driven by the power motor, and a

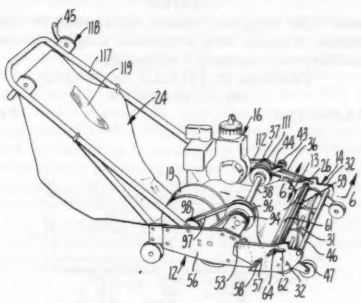


blade lifting assembly for selectively raising the rotary blade substantially against the underside of the housing.

ERRATUM

For Class 56—6 see:
Patent No. 3,783,533

3,783,592
GARDEN GROOMING MACHINE AND ROTOR THEREFOR
Karl Schraut, 5431 E. Sussex, Fresno, Calif.
Filed May 6, 1970, Ser. No. 35,069
Int. Cl. A01d *87/10*
U.S. Cl. 56—13.3 **4 Claims**

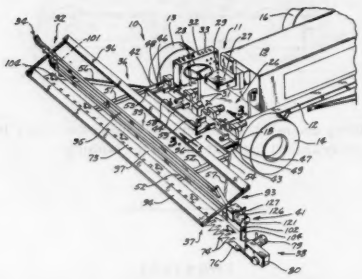


A self-propelled lawn vacuum, mower and sweeper having interchangeable reel-type mower and rotary brush units, both feeding material tangentially toward the intake of the vacuum. The drive wheels are spring-loaded to follow the ground contour, and the height of the interchangeable units with respect to the vacuum is adjustable. A moveable shutter is interposed between the mower and brush units and the vacuum intake to regulate air flow. The prime mover drives an axial-intake fan having an unusual rotor design, with two pairs of diametrically opposed blades perpendicular to the back plate, each of the pairs being tangent to its own circle concentric with the shaft of the fan, the two circles being of differing diameters. The radially inner corner of each blade away from the back plate is bevelled.

3,783,593
PLANT CUTTING APPARATUS

Arnold E. Ernst, Wolverton, Minn.

Filed June 12, 1972, Ser. No. 261,878
Int. Cl. A01d *45/02*
U.S. Cl. 56—14.4 **3 Claims**

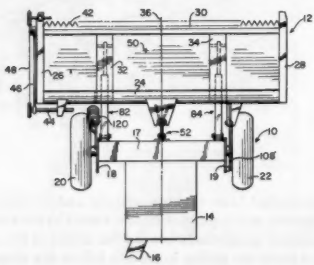


A plant cutting apparatus adapted for mounting to a self-propelled vehicle. The apparatus having a frame connected to the forward portion of the vehicle, a cutter bar including a reciprocal blade disposed transversely to the direction of movement of the vehicle, a first motor for operating the blade and adapted to selectively adjust the speed of movement of the blade, a rotatable reel to comb the plants toward the cutter bar, a second motor selectively operable to control the speed of rotation of the reel, and an adjusting unit interconnecting the vehicle and frame to adjustably fix the height of the cutter bar relative to the ground.

3,783,594
HARVESTER PLATFORM SUSPENSION AND LINKAGE SYSTEM

J. Donald Watt, Milligrove, Ontario, and Herbert W. Molzahn, Hamilton, Ontario, both of Canada, assignors to International Harvester Company, Chicago, Ill.

Filed Sept. 18, 1972, Ser. No. 289,912
Int. Cl. A01d *35/14*
U.S. Cl. 56—15.8 **9 Claims**

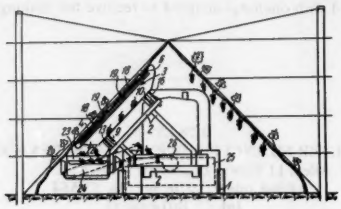


A self-propelled windrower having a wheeled frame and a harvester platform disposed forwardly of the frame for cutting a standing crop and depositing the crop onto the ground in a windrow. The platform is mounted on the frame by a central ball and socket joint permitting radial float. The platform is movable vertically by a pair of hydraulic lift cylinders and is floatably supported by coil springs disposed on the cylinder units. A stabilizer bar prevents undesirable swinging of the platform about a vertical axis. The platform is of the type wherein the location of the drive system components contributes to an asymmetrical center of gravity. A balancing spring is connected between the frame and the platform to counter the effect of the asymmetrical center of gravity.

3,783,595
GRAPE HARVESTER

Cheslav Stanislavovich Tolochko, ulitsa Budennovskaya 203/2, kv. 17; Vladimir Ivanovich Popov, ulitsa Budennovskaya 203/2, kv. 9, both of Novocherkassk; Miron Vasilievich Tsitsiv, ulitsa narodnaya, 14, Kishinev; Alexandr Nikolaevic Varfolomeev, Kotovskoe Shosse, 226, kv. 16, Kishinev, and Marlen Mikhailovich Gervolsky, ulitsa Frunze, 9, kv. 3, Kishinev, all of U.S.S.R.

Continuation-in-part of Ser. No. 760,811, Sept. 19, 1968, abandoned. This application July 9, 1971, Ser. No. 161,061
U.S. Cl. 56—331 **3 Claims**

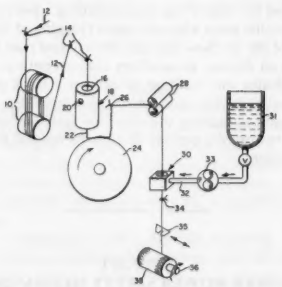


A grape harvester comprising a blade cutting apparatus mounted on a carrier bar so that its longitudinal axis of symmetry forms an acute angle with the plane normal to the direction of movement of chassis; the upper end of said cutting apparatus arranged in front with respect to the direction of the harvester movement in the cutting position. Cutting apparatus is mounted on the carrier bar at another acute angle to the plane superposable upon the espalier canopy.

3,783,596
JET APPLICATION OF TEXTILE FINISH TO MOVING THREADLINES

Richard B. Waldkirch, Camden, S.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 26, 1971, Ser. No. 146,876
Int. Cl. D01h *13/30*
U.S. Cl. 57—157 F **3 Claims**



An air jet of the type used to apply torque to a moving threadline is used as an applicator for liquid finish. The liquid is supplied to the yarn passage of the jet at a controlled rate and the yarn is contacted around its periphery by the liquid as the yarn passes through the jet.

3,783,597

THREAD-TWISTING APPARATUS WITH DUAL THREAD GUIDE

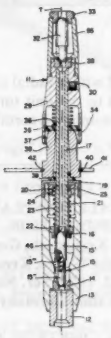
Aloys Greive, and Aloys Treus, both of Westfalia, Germany, assignors to Hamel GmbH Zwirnmaschinen, Munster/Westf., Germany

Continuation-in-part of Ser. No. 188,335, Oct. 12, 1971. This application June 19, 1972, Ser. No. 264,280

Claims priority, application Germany, June 21, 1971, G 71 23 827.2

Int. Cl. D01h *1/10, 7/86, 13/10*

U.S. Cl. 57—58.52 13 Claims



A thread-twisting apparatus has a hollow stem through which the threads to be twisted together are drawn axially. A pair of axially spaced thread brakes are provided in the stem, and a hub carrying a thread guide is rotationally mounted on the stem. This guide is a bent wire having a C-shaped central portion embracing the hub and formed with an inwardly directed finger engaging in a radially open hole in the hub for rotational coupling of the hub and guide. A rotation brake acts on the hub and the adjustment for this brake and for one of the thread brakes can be carried out in a single operation whereby both braking effects are either increased or decreased simultaneously.

3,783,598

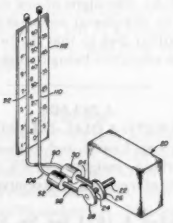
INSTRUMENT FOR INDICATING TIME

Edward L. Parr, 301 N. Cuyamaca, El Cajon, Calif.

Substitute for Ser. No. 806,412, March 12, 1969, abandoned. This application Oct. 26, 1972, Ser. No. 301,240

Int. Cl. G04b *45/00*

U.S. Cl. 58—2 8 Claims



An instrument for indicating time in which an elongated tube is in registrable relationship with time indicating indicia and in which clock mechanism is employed for effecting longitudinal movement of a colored liquid in the tube progressively in synchronism with the movement of the clock mechanism. Preferably, two such tubes are provided, one indicating the hours and the other indicating the minutes, both being actuated by one clock mechanism.

3,783,599

ALARM TIMEPIECE

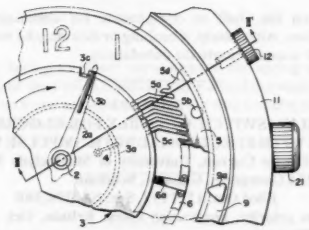
Kazuo Tanaka, Tokyo, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed July 14, 1972, Ser. No. 271,727

Claims priority, application Japan, July 15, 1971, 46/52716

Int. Cl. G04c *21/16*; G04b *23/06*

U.S. Cl. 58—16.5 11 Claims



An alarm mechanism having an improved presetting device for use in a small timepiece, especially an alarm watch. A multi-point presetter is provided comprising a unique memory device comprising in turn a stationary preset ring having a number of substantially inwardly extending elongated resilient spring contact arms, on the one hand, and an alarm switch disc which is arranged to rotate in unison with the hour hand of the watch movement, on the other. When a manipulating crown or knob is turned so as to bring the alarm switch disc to a certain predetermined position corresponding to a first alarm time point, and it is pulled in. Then, a corresponding one of the spring contact arm is forcibly transferred from below to the top of the disc, so as to occupy a preset memory position. Second and further presetting operations can be performed in the similar way as above. When the hour hand arrives at the earlier preset position, a conductive layer or member provided on the disc is brought into electrical connection with the preset one of the contact arms, so as to energize an electrical alarming buzzer.

3,783,600

ELECTROMECHANIC DRIVING MECHANISM FOR THE HANDS OF A TIMEPIECE

Wolfgang Ganter, Schramberg-Sulgen, and Horst Dinger, Tennenbronn, both of Germany, assignors to Firma Gebruder Junghans G.m.b.H., Schramberg, Germany

Filed July 27, 1972, Ser. No. 275,872

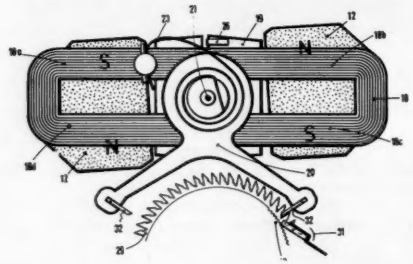
Claims priority, application Germany, July 29, 1971, P 07 12 931.8; July 29, 1971, P 07 12 931.9

Int. Cl. G04b *17/00*

U.S. Cl. 58—28 B 11 Claims

A driving mechanism for a timepiece comprises a shaft which rotatably mounts a stepping anchor and a coil. The coil is disposed between a plurality of permanent magnets. Suita-

ble electrical connections are provided between the coil and an impulse generator. The coil may be asymmetrically arranged on the shaft to compensate for unbalances in the mechanism. Alternately, a bushing or disk may be mounted on the shaft to compensate for unbalances.



3,783,601

PENDULUM SWITCH ASSEMBLY FOR CLOCKS OR THE LIKE WITH ELECTROMAGNETIC IMPULSE MEANS

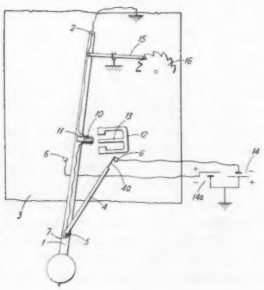
Samuel Crowe Curran, University of Strathclyde Royal College, 204 George St., Glascow, Scotland

Filed Oct. 11, 1972, Ser. No. 296,568

Claims priority, application Great Britain, Oct. 14, 1971, 47,756/71

Int. Cl. G04c *3/02*; **H01h** *35/02, 51/34*

U.S. Cl. 58—30 **12 Claims**



A pair of terminals are arranged one on either side of the vertical rest position of a main pendulum. An inverted secondary pendulum is pivotally mounted on the main pendulum such that oscillations of the main pendulum induces synchronous oscillation of the secondary pendulum between and into and out of contact with the terminals whereby the secondary pendulum is usable as a switching member.

3,783,602

OPTICAL TIME DISPLAY DEVICE HAVING INTERMITTENT DRIVE

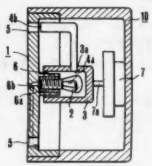
Jiro Ochiai, Yokohama, and Rintaro Nishina, Yonezawa, both of Japan, assignors to Tamura Electric Works, Ltd., Tokyo, Japan

Filed May 22, 1972, Ser. No. 255,782

Claims priority, application Japan, May 25, 1971, 46/41977

U.S. Cl. 58—50 R **1 Claim**

An optical time display device comprises a dial plate provided with a plurality of unit time display perforations arranged on a circle on one side of the dial plate, a source of light mounted on the opposite side of the dial plate at the center thereof. The source of light is enclosed by an opaque rotary cylinder provided with a radial opening and the light is successively transmitted to the unit time display openings by means of a bent light transmission member with one end fitted in the radial opening.



3,783,603

CLOCK WITH OPTICALLY DISPLAYED DIGITAL TIME INDICATION

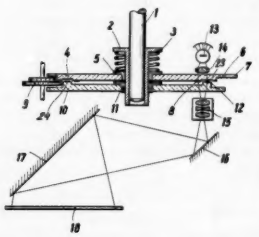
Paul Himmelsbach, Bad Kreuznach, Germany, assignor to Jos. Schneider & Co. Optishe Werke, Kreuznach, Germany

Filed June 2, 1972, Ser. No. 259,224

Claims priority, application Germany, June 4, 1971, P 21 27 932.3

Int. Cl. G04b *19/30, 19/06*

U.S. Cl. 58—50 R **9 Claims**



A clock with two coaxial transparent or translucent disks bearing hour and minute digits, respectively, has a screen onto which the instantaneous time is projected by an optical system including an objective in line with overlapping peripheral zones of the two disks. The digits of one disk are carried on an annular ridge of its peripheral zone received in an annular depression of the other disk so that the two sets of digits lie in the same plane, the objective being focused upon that plane.

3,783,604

WRIST WATCH WITH A DIAL-ILLUMINATING DEVICE

Brigliano Florent; Vogt Ernest, and Edmond Marmound, all of Geneva, Switzerland, assignors to PR Societe de Revision, Traitement de l'Information et Recouvrement SA, Geneva, Switzerland

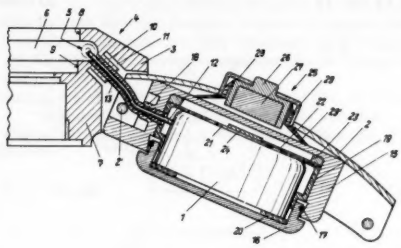
Filed Feb. 5, 1973, Ser. No. 329,553

Int. Cl. G04b *19/30, 37/08*

U.S. Cl. 58—50 R **5 Claims**

In a wrist watch comprising a pivotally mounted bracelet element housing an electric storage cell supplying a miniature bulb for illuminating the dial, the bulb is housed in a recess between two glass-retaining snap grooves in the watch case,

said recess communicating with the exterior via a bore in a tubular projection on the watch case. A sheathed conducting lead connecting the bulb to the cell passes through and is constricted in said projection by ductile deformation of the metal



thereof to form a watertight fit, and is likewise constricted in a similar projection on the cell casing. The bracelet element also includes contact means for closing and opening the electric circuit of the bulb.

3,783,605

WRIST WATCH HAVING A PUSH-BUTTON

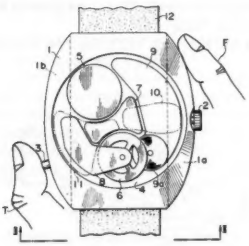
Tetuya Yasuda, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1972, Ser. No. 297,150

Claims priority, application Japan, Oct. 12, 1971, 46/93460

Int. Cl. G04f *7/04*

U.S. Cl. 58—74 **3 Claims**



A wrist watch having two externally operating members, at least one of which is a push-button, in which said push-button is provided on the side surface of a case between the 7:30 and 8:30 positions of a dial and the other one of said externally operating members is provided on the side surface of said case opposite to said push-button but at a location deviating from the position squarely opposite to said push-button with respect to the center of said case.

3,783,606

MECHANISM FOR COUPLING AND LOCKING A ROTATABLE MEMBER OF A TIMEPIECE AND OF A SMALL MECHANISM

Gerald Dubois, and Francois Berthoud, both of Le Lieu, Switzerland, assignors to Ebauches S.A., Neuchatel, Switzerland

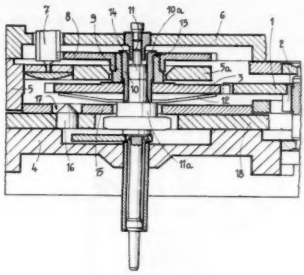
Filed Mar. 8, 1973, Ser. No. 339,300

Claims priority, application Switzerland, Mar. 15, 1972, 761/72

Int. Cl. G04f *7/04*; **G04b** *33/00*

U.S. Cl. 58—74 **4 Claims**

Mechanism for coupling and locking a rotatable member of a timepiece. Rotatively connected driving and driven elements are coaxially mounted on a common shaft. One element bears axially against a shoulder of the shaft by the force of a spring bearing on another shoulder of the shaft. A control member



acts on the spring to effect movement of the spring and two elements until the driven element abuts a locking stud causing release of the force against the elements and thereby releasing them one from another.

3,783,607

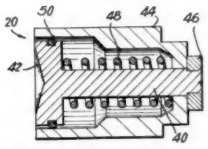
PUSHER FOR ELECTRONIC DIGITAL WATCH

Walter Alphonse Feurer, Armonk, N.Y., assignor to Feurer Bros., Inc., North White Plains, N.Y.

Filed June 12, 1972, Ser. No. 261,731

Int. Cl. G04b *37/08*, *19/30*

U.S. Cl. 58—90 B **5 Claims**



A manual actuating arrangement on electronic watches for illuminating the dial face of the watch or setting the time. A plunger is actuated against the force of a spring within a sleeve-shaped housing. Upon actuation of the plunger, a switch may be closed for connecting the battery within the watch to means for illuminating the dial face. The actuation of the plunger may also set the time for the watch. The plunger has either a cap-shaped head portion or a recessed head portion which may be actuated by the thumb of the user. O-rings between the plunger and the internal surface of the housing provide for waterproof construction.

3,783,608

INDEXING DEVICE FOR A STEP MOTOR IN AN ELECTRONIC TIMEPIECE

Hideichi Miyazawa, Owa Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Feb. 15, 1972, Ser. No. 226,586

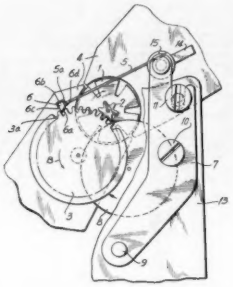
Claims priority, application Japan, Feb. 17, 1971, 46/8428

Int. Cl. G04c *17/00*, *15/00*

U.S. Cl. 58—116 R **3 Claims**

An indexing device is provided for an electronic timepiece which includes a rotor and stator arrangement. The indexing device includes a pinion rotatable with the rotor and an index

wheel engaged with and rotated by the pinion. An index spring having cantilever form is mounted adjacent the index wheel



and a pallet jewel is mounted on the spring and is in engagement with the index wheel to prevent reverse rotation and vibration of the same.

3,783,609

METHOD AND APPARATUS FOR REMOVING THE BURR OF CHAIN-LINKS

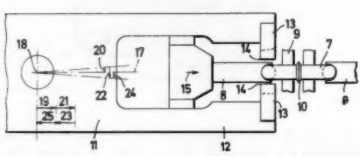
Toni Wuest, Cologne, Germany, assignor to Meyer, Roth & Pastor, Maschinenfabrik GmbH, Koln, Germany

Filed Mar. 13, 1972, Ser. No. 234,352

Claims priority, application Germany, Mar. 11, 1971, P 21 11 659.6

Int. Cl. B21l *15/00*

U.S. Cl. 59—35 **6 Claims**



A method and apparatus for fully removing weld-burrs from a workpiece formed by butt-welding two sections end to end, such as a welded chain link. The weld-burr which extends annularly of the workpiece cross-section is removed by shearing the burr into two diametrically opposed pieces. The method for removing the weld-burrs is applicable for any cross-section of the work-piece which is symmetrical about an axis in the plane of the cross-section. An apparatus for removal of weld-burrs uses a fork-shaped tool having two cutting edges formed at the ends of in-turned members provided one each at the free ends of the fork-shaped tool. The tool is expediently pivotally mounted so as to be capable of controlled oscillatory movement about an axis perpendicular to a plane containing the two limbs of the fork. The apparatus also incorporates means to move and retract the fork-shaped tool in a direction parallel to the length of the workpiece so that the removal of the weld-burr is effected by longitudinal shear strokes of the cutting edges which are successively made to engage diametrically opposite sides of the welded cross-section of the workpiece.

3,783,610

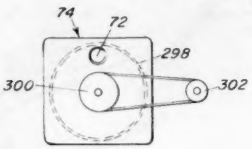
ANTI-POLLUTION INTERNAL COMBUSTION ENGINE

Orville Gano, 18632 Talisman, Hesperia, Calif.

Filed Feb. 8, 1972, Ser. No. 224,423

Int. Cl. F01b *29/04*

U.S. Cl. 60—16 **33 Claims**



This disclosure relates to an anti-pollution internal combustion and compressed air operated engine. The engine includes a group of firing cylinders and a group of compression cylinders. A storage reservoir is filled with compressed air during the engine firing and braking modes of operation. After stopping, the stored air motors the engine until it begins firing. The engine is provided with a pressurized fuel system which is regulated by the pressure in the storage reservoir. A selector valve is used to select the proper modes of operation for the compression cylinders; namely, the braking mode for storing compressed air, the motoring mode for driving the engine on the compressed air stored during the braking mode or the normal compression mode when the engine is firing.

3,783,611

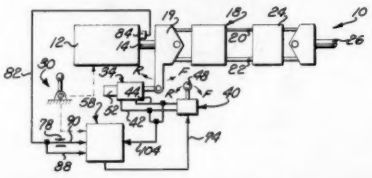
HYDROSTATIC TRANSMISSION CONTROL SYSTEM

Edward J. Bojas, Marshall, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 22, 1972, Ser. No. 237,086

Int. Cl. F16h *39/46*

U.S. Cl. 60—19 **29 Claims**



An improved control system for a hydrostatic transmission includes an anti-stall system for preventing overloading of an engine which drives the hydrostatic transmission. The anti-stall system senses the speed at which the engine is operating, the input to output speed ratio of the transmission as indicated by the displacement of one unit of the hydrostatic transmission, and the setting of a throttle for the engine. The anti-stall system utilizes these three inputs to regulate the pressure of control fluid conducted to a speed control valve. The speed control valve is selectively operable to vary the pressure of control fluid conducted to a pressure responsive control motor which adjusts the displacement of a unit of the hydrostatic transmission. The anti-stall system varies the pressure of the control fluid conducted to the speed control valve with variations in the fluid pressure conducted to the control motor from the speed control valve. However in the event of an impending stalling of the engine, the anti-stall system reduces fluid pressure conducted to the speed control valve. The speed control valve opens in response to this decrease in pressure to quickly decrease the fluid pressure to which the control motor

is exposed. This effects operation of the control motor to decrease the output speed of the hydrostatic transmission and thereby reduce the load on the engine.

3,783,612

HOT-GAS PISTON ENGINE

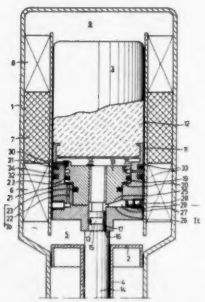
Johan Herman DeWilde DeLigny; Cornelis Leendert DeWit, and Petrus Johannes Cornelius Van Rooij, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 119,577, March 1, 1971, abandoned. This application May 24, 1972, Ser. No. 256,486

Claims priority, application Netherlands, Mar. 28, 1970, 7004499

Int. Cl. F02g *1/04*

U.S. Cl. 60—24 **1 Claim**



The invention relates to a hot-gas piston engine comprising at least one compression space of variable volume and at least one expansion space also of variable volume communicating with the former, said spaces having, in operation, relatively different temperatures, the volumes of these spaces being variable by means of piston-like bodies, which are connected each via a piston rod with a driving gear, while at least the piston-like body adapted to vary the volume of the expansion space is formed by a base element secured to the end of the piston rod concerned, said base element being provided on its side facing the expansion space with a heat-insulating piston cap.

3,783,613

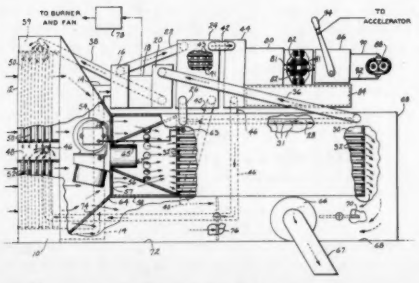
VEHICULAR POWER PLANT

Roy O. Billings, and Samuel R. Henderson, both of Milwaukee, Wis., assignors to Kaye A. Meyer, New Berlin, Wis., a part interest

Filed Mar. 29, 1972, Ser. No. 239,202

Int. Cl. F01k *25/00, 25/02*

U.S. Cl. 60—38 **5 Claims**



An expanded-vapor-driven device is driven by pressurized vapor from a generator, and a pressurized-liquid-driven device is driven by pressurized liquid from the same generator. The working fluid in the generator is preferably a mixture of two different fluids, one of which is more volatile than the other and which is soluble in the other. The vapor and liquid exhaust from the two devices is piped to an absorber unit where the vapor and liquid are cooled and remixed before being recycled back to the generator. The absorber is located in the air inlet path to the burner for the generator and preheats the primary and secondary air for the burner. The mixed fluid from the bottom of the absorber is pumped to a heat exchanger which is connected so as to be in a heat exchange relationship with the hot liquid that is moving from the bottom of the generator to the pressurized-liquid-driven device. This preheats the mixed fluid just before it is pumped into the generator.

3,783,614

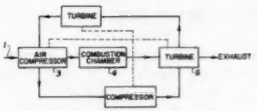
TURBINE ENGINE

Harold L. Walker, P.O. Box 185, Finch, Ontario, Canada

Filed Feb. 10, 1972, Ser. No. 225,121

Int. Cl. F02g *5/00*

U.S. Cl. 60—39.18 R **3 Claims**



A turbine engine of conventional compressor, combustion chamber, power turbine type has a fluoro carbon cooling system. The cooling system comprises a heat exchanger formed by passages through the turbine of the basic engine in which heat is exchanged between the heated and expanded air of the basic engine and the fluoro carbon and from which the expanded fluoro carbon is directed through a cooling system turbine to produce power. From the cooling system turbine the fluoro carbon is directed to a condenser which is in fact constituted by the compressor of the basic engine and then returned through a compressor to the heat exchanger so that effective cooling of the basic engine is achieved and power is derived from the heat of the exhaust gases of the basic engine to be applied to the fluoro carbon turbine.

3,783,615

EXPANSION ENGINE

Cornelis Hubers, Van Ostadelam 2, Rozenburg, Netherlands

Filed Oct. 29, 1971, Ser. No. 193,685

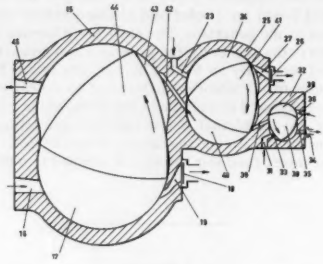
Claims priority, application Netherlands, Oct. 29, 1970, 7015862

Int. Cl. F02g *1/00*

U.S. Cl. 60—39.61 **2 Claims**

An expansion engine having a motor driven by combustion gases delivered by a combustion apparatus and a control unit for the motor. The motor includes an epicycloidal piston rotatably mounted in a cylinder, an expansion chamber, an air compression chamber, an inlet for fresh air and an outlet for the exhaust gases. The control unit has an epicycloidal piston rotatably mounted in a cylinder, an inlet chamber for the combustion gases provided with an inlet channel for the combustion gases with the inlet channel being in open connection with the combustion apparatus and an air compression chamber provided with an outlet channel connected with the

combustion apparatus and provided with a non-return valve. The inlet chamber and the air compression chamber of the



control unit are connected by channels with the expansion chamber and the compression chamber, respectively of the motor.

3,783,616

CONTROL METHOD FOR DETONATION COMBUSTION ENGINES

Leslie W. Norman, Scottsdale; Skillman C. Hunter, and George A. Russell, both of Phoenix, all of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Mar. 2, 1961, Ser. No. 92,827

Int. Cl. B63b *11/00*

U.S. Cl. 60—204 **1 Claim**

1. A method of operating a hypersonic aircraft powered by a hypersonic detonation combustion engine of the thermodynamic duct type, and wherein the aircraft includes means for generating standing oblique shock waves in the airstream approaching the duct inlet and the duct includes a constricted combustion zone between said inlet and the duct exhaust nozzle, means for generating standing oblique shock waves in the airstream within the duct between said inlet and zone, a forwardly hinged, angularly adjustable ramp in and defining a wall of said zone for generating a standing oblique shock wave in the airstream within said zone, means at the exhaust end of said zone for generating a standing normal shock wave in the airstream as the latter emerges from said zone, and means for injecting fuel into said airstream within the duct between said inlet and zone, whereby the static temperature of the airstream is successively elevated across said shock waves and said fuel undergoes steady state detonation across said normal shock wave, said operating method comprising the steps of:

regulating the rate of fuel flow to said duct in response to changes in speed of the aircraft to maintain said aircraft speed in the hypersonic range for which the shock wave generating means of the aircraft and engine are designed; and

simultaneously adjusting the angle of said ramp in predetermined relation to the rate of fuel flow to said duct to maintain the specific fuel consumption at a predetermined optimum value.

3,783,617

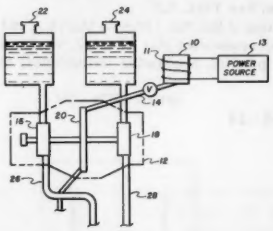
PROCESS FOR PRODUCING ENERGY IN A GAS GENERATOR SYSTEM

Donald Pilipovich, Ventura, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sept. 26, 1968, Ser. No. 762,938

Int. Cl. C06d *5/04*

U.S. Cl. 60—218 **4 Claims**



In a gas generator system, a process for producing hot gaseous power by heating bis-(fluoroformyl)-peroxide to give carbon dioxide, carbonyl fluoride, and oxygen.

3,783,618

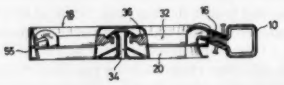
AERODYNAMIC ENGINE SYSTEM

Osamu Kawamura, No. 2-13 Koganehara, Matsudo, Japan

Filed Mar. 29, 1972, Ser. No. 239,113

Int. Cl. F02k *3/04*

U.S. Cl. 60—226 R **7 Claims**



A lift-fan engine system of small size but strong lifting power which comprises a lift-fan having a plurality of fan blades each formed by an inner-fan blade portion gradually twisted toward its outside and a turbo-fan blade portion incorporated with the inner-fan blade portion at its outer end. At the boundary between the inner-fan and turbo-fan blade portions is provided a first shroud segment of the turbo-fan blade portion and beneath it is provided a second shroud segment. By radially mounting the fan blades as constructed in the above by means of their root portions on a fan or rotor disc, the first and second shroud segment of the respective fan blades are adjoined with the first and second shroud segments of adjacent fan blades so as to constitute a first ring and a second ring between which a passage of the high-temperature gas is formed.

3,783,619

OXIDATIVE CATALYTIC CONVERTER

Henry E. Alquist, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

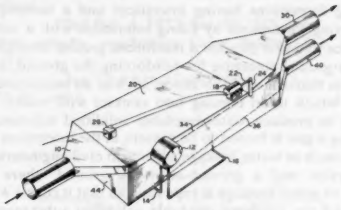
Filed May 3, 1972, Ser. No. 249,787

Int. Cl. F01n *3/14*

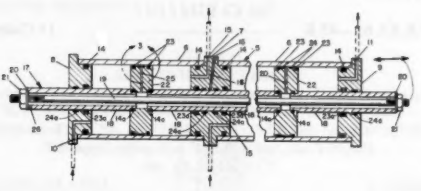
U.S. Cl. 60—288 **6 Claims**

An oxidative catalytic converter comprising a shell, partitions within said shell which divide the interior into a plurality of sections which contain a catalyst material, an inlet to said

shell, a valve located in said inlet which selectively admits gases passing through the converter to portions of the catalyst material in accordance with the gas flow rate or volume and/or temperature and an outlet from said shell for withdrawing gases therefrom.



3,783,620
SYNCHRONIZER FOR HYDRAULIC CYLINDERS
Jack M. Moe, 4550 Sixth Ave., Tacoma, Wash.
Filed Sept. 3, 1971, Ser. No. 177,589
Int. Cl. F15b *7/00*; F01b *7/00*
U.S. Cl. 60—547 **5 Claims**

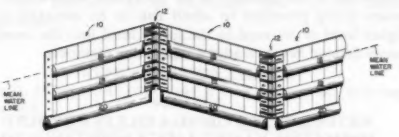


This invention consists of a plurality of steel tubes placed end to end with a divider plate between the ends of the aforesaid tubes; and an end plate on the outer end of each tube. The aforesaid invention is held together by a plurality of longitudinally disposed tie bolts or rods that pass through all of the dividers and the aforesaid end plates. The piston rod is provided with a plurality of pistons while the aforesaid divider plates and the end plates are all provided with L-shaped fluid passages, the invention being suitably connected by pipes or tube to a plurality of hydraulic cylinders, each hydraulic cylinder having a different load imposed thereon; and the said invention also being connected by pipes or tubes to a source of hydraulic fluid under pressure, the synchronizer adapted to keep all of the aforesaid hydraulic cylinders in unison.

3,783,621
CONVERTIBLE BARRIER FOR SUBSTANCES FLOATING ON WATER
Paul Preus, P.O. Box 1002, Toms River, N.J., and John J. Gallagher, 252 Burley Rd., Annapolis, Md.
Division of Ser. No. 137,799, Apr. 27, 1971, Pat. No. 3,667,235
Filed June 5, 1972, Ser. No. 259,559
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F **2 Claims**

A barrier for substances floating on water having a flotation member and a liquid pervious and a liquid impervious skirt depending therefrom. The liquid impervious skirt is deflected at currents greater than about one knot and the oily substances are treated with a particulate oleophilic-hydrophobic substance less dense than water for retention by said liquid pervious skirt.

3,783,622
METHOD AND SYSTEM FOR THE CONTAINMENT AND SALVAGE OF CHEMICALS AND OILS AT SEA
Charles L. Gambel, 3500 Monticello Ave., New Orleans, La.
Filed Sept. 16, 1971, Ser. No. 181,162
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F **14 Claims**

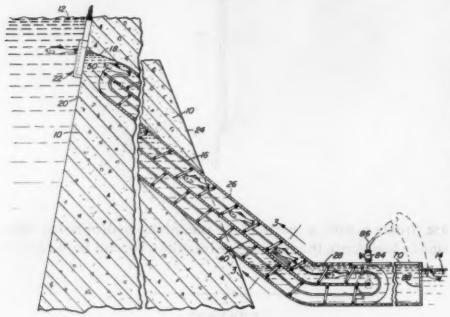


A rigid barrier unit for use in assembling an enclosure around a surface area of a body of water is provided with adjustable buoyancy and ballasting chambers so that a nearly neutral buoyancy condition can be established with substantially all of the mass of the unit below the turbulence level of a body of water in which the barrier unit is placed. A method of deployment of such units involves a floatation of the units in horizontal attitudes to the area to be enclosed, followed by a ballasting of the units into vertical attitudes so as to extend around an oil or chemical spill area.

3,783,623
FISH ESCALATOR
Stanley E. Ogden, P.O. Box 618, Mill City, Oreg.
Filed Feb. 8, 1972, Ser. No. 224,509
Int. Cl. E02b *8/08*
U.S. Cl. 61—21 **6 Claims**

An enclosed endless conveyor-type fish elevator for carrying fish upstream over or through a dam. The elevator includes a pair of parallel tubular passageways having one set of identical corresponding transverse dimensions and a second set of different corresponding dimensions. An endless chain is disposed at each pair of corresponding sides of the passageways and each chain is arranged in generally parallel reaches with one reach extending along the mid-point of the adjacent side of one of the passageways and the other reach of the chain extending midway along the adjacent side of the other passageway. Corresponding reaches of the chains have partition members secured therebetween and the partition

members are mounted in such a manner as to be at least slightly oscillatable and urged into tight sliding engagement with the associated passageways by means of tension of the endless chains. The passageway having the smaller cross-sectional area comprises the elevating passageway for elevating fish to the higher level and the passageway having the greater cross-sectional area comprises the return passageway or means for lowering fish to the lower level. In this manner, a



greater downward thrust is applied to the partition members in the return passageway by the head pressure of water acting upon the upstream side of the partitions disposed in the return passageway than the pressure exerted by head pressure in the fish elevating passageway and the elevator thereby works somewhat in the manner of an undershot waterwheel with means being provided to admit fish to be elevated to the higher level or lowered to the lower level into the compartments defined between adjacent partition members.

3,783,624

METHOD OF PROVIDING A PILE IN A GROUND FORMATION HAVING A HIGH RESISTANCE TO MOVEMENT

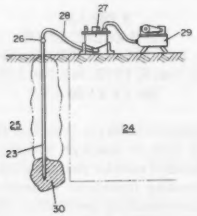
Sadao Nakade, Itami; Hirosuke Kubota, Osaka; Toshiyuki Oshita, Osaka, and Kuniyoshi Sakane, Osaka, all of Japan, assignors to Kabushiki Kaisha Takenaka Komuten, Osaka-shi, Japan

Division of Ser. No. 808,865, March 20, 1969, Pat. No. 3,623,330. This application May 11, 1971, Ser. No. 142,377

Claims priority, application Japan, Nov. 16, 1968, 43/83940; July 13, 1968, 43/49492; Mar. 21, 1968, 43/18635

Int. Cl. E02d *3/12, 3/14*

U.S. Cl. 61—36 R **8 Claims**



This invention relates to technique of plugging formations in civil engineering and construction, reinforced underground structure and underground structure required for strengthening the ground thereof, which may be effectively utilized in plugging or in strengthening unstable ground in sealing-off points of water leakage or oil leakage in civil engineering and construction, in preventing gas leaks in soils or in construction, or in increasing bearing capacities of pull-out or push-in piles to be constructed.

Thus, the invention is intended to provide a technique for plugging formations having interstices and a technique for compacting formations by filling interstices with a solidified substance and also provide a reinforced ground structure and an underground structure for reinforcing the ground, characterized in that a fluidal substance, such as an isocyanate compound, which upon coming into contact with water, reacts thereby to produce water-insoluble solidified substance and liberating a gas, is forced to be present in the interstices in formations such as water leakage regions in civil engineering and construction and a ground or weak ground where water leakage or water seepage is expected, so that it reacts with the water and the resulting insoluble solidified substance is allowed to be intimately bonded to the surfaces of the interstices under the pressure of the liberated gas, thereby sealing-off the interstices easily and effectively.

3,783,625

LINING SYSTEM FOR TUNNELS AND LIKE PASSAGES

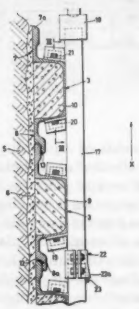
Franz Gantke; Walter Zywietz, both of Dortmund; Rudolf Seiz, Herrsching, and Heinz Eickhoff, Bochum, all of Germany, assignors to Hoesch AG, Dortmund and Eisenhutte Heintzmann & Co., Bochum, Germany

Filed Feb. 24, 1972, Ser. No. 228,855

Claims priority, application Germany, Feb. 27, 1971, P 21 09 354.9

Int. Cl. E21d *11/14*

U.S. Cl. 61—45 R **11 Claims**



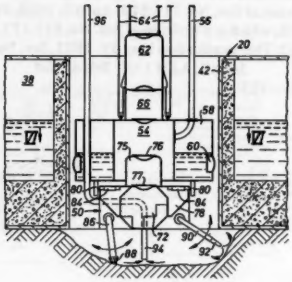
A plurality of arcuate lining units are adapted to be arrayed in longitudinal direction of a passage and are each composed of two or more arcuate segments having an outwardly open profiled cross section and provided with a pair of flanges extending substantially parallel in longitudinal direction of the passage. One of the flanges has one face which is directed outwardly of the passage and provided with a recess extending longitudinally thereof and the other flange has another face directed inwardly of the passage and provided with a bead which also extends in longitudinal direction of the passage, with the bead of one segment being received in the recess of a circumferentially adjacent segment so that the flanges of the two segments overlap one another. These flanges are connected and sealing means may be provided at the joints between the flanges.

3,783,626

STRUCTURE, AND METHOD AND APPARATUS FOR FOUNDING A STRUCTURE

Frode Johan Hansen, Kingswood, England, assignor to Redpath Dorman Long (Contracting) Limited, Edinburgh, Scotland

Filed Feb. 4, 1972, Ser. No. 223,590
Claims priority, application Great Britain, Feb. 8, 1971, 4,191/71
Int. Cl. E02b 17/04; E02d 27/52
U.S. Cl. 61—46.5 10 Claims



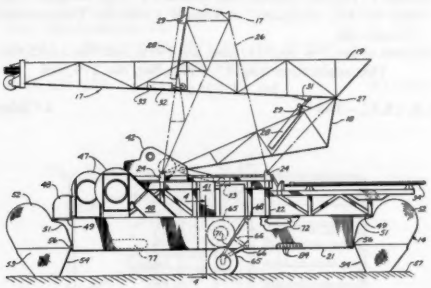
A method of founding a structure in a subaqueous bed comprising disposing the structure on the bed and excavating beneath the structure, the excavation being effected by a wheeled positively buoyant vehicle which moves upon an undersurface of the structure and which is provided with excavating equipment.

3,783,627

AIR CUSHION VEHICLE

Leon C. Blurton, Brea, Calif., and Saverio J. Cina, Brooklyn, N.Y., assignors to Global Marine Inc., Los Angeles, Calif.

Division of Ser. No. 12,778, Feb. 19, 1970, Pat. No. 3,693,729.
This application Apr. 1, 1971, Ser. No. 130,462
Int. Cl. E21b 7/12
U.S. Cl. 61—46.5 5 Claims



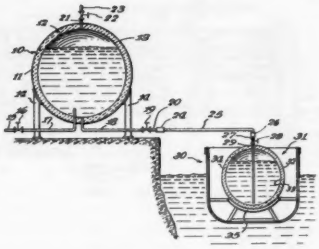
An air cushion vehicle particularly useful for a drilling rig for oil wells and the like employed in arctic environments having open water, muskeg, ice, snow, and tundra is described. Means are also described for launching the air cushion vehicle from a ship and for preparing an arctic drilling site for the air cushion supported drilling rig. Means are provided on the bottom of the vehicle for preventing thawing of the frozen soil or ice beneath the vehicle as oil well drilling or workover operations are performed.

3,783,628

METHOD AND APPARATUS FOR TRANSPORTING LIQUEFIED NATURAL GAS

Robert Fredrick Reiche, Wheaton, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed July 17, 1972, Ser. No. 272,127
Int. Cl. F17c 7/02
U.S. Cl. 62—55 6 Claims



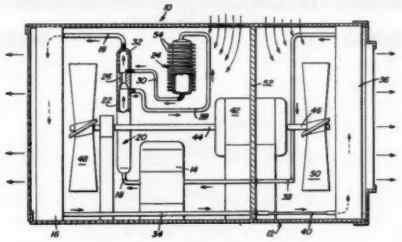
Liquefied natural gas is transported by subcooling the liquefied natural gas below a temperature at which it has a vapor pressure equal to atmospheric pressure, loading the subcooled liquefied natural gas into an insulated vacuum vessel in a transporting means, transporting the subcooled liquefied natural gas in said insulated vacuum vessel to a destination, without refrigerating the liquefied gas, during a time period such that the liquefied natural gas arrives at the destination at a temperature no warmer than −260°F. and, unloading the liquefied natural gas at the destination. The liquefied natural gas while subcooled is unloaded and stored at about atmospheric pressure in an insulated tank without added refrigeration.

3,783,629

REFRIGERATION SYSTEM

Clyde G. Phillips, 105 Maryland Ave., Westview III, Wilmington, Del.

Filed Sept. 13, 1972, Ser. No. 288,542
Int. Cl. F25b 47/00
U.S. Cl. 62—85 7 Claims



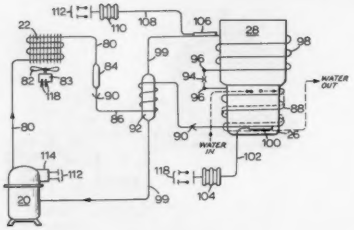
A refrigeration system having a compressor and a condenser, a pipeline connected between the compressor and condenser and a filter-dryer heat exchanger connected to a high gas velocity ejector built into a pipeline between the compressor and condenser. This ejector is formed by a port through which passes refrigerant gas at high velocity. At the discharge end of this port a pipe of small diameter is inserted to the exact spot which will cause a suction to be drawn on it, thus creating the ejector effect. The suction on the small-diameter pipe causes hot refrigerant gas to be drawn from a hot gas discharge line through a filter-dryer heat exchanger of large size where the hot gas is filtered and cooled so it will change to a liquid in the small diameter pipe and be ejected back into the main hot gas line as a cool liquid refrigerant by the action of the ejector. The ejector is of large port design so as not to cause back pressure on the main refrigerant system.

3,783,630

METHOD AND APPARATUS FOR COOLING LIQUIDS

Douglas Clark, Scarborough, Ontario, Canada, assignor to CDRH Limited, Toronto, Ontario, Canada

Filed Nov. 24, 1971, Ser. No. 201,788
Int. Cl. F25d *17/00*
U.S. Cl. 62—98 **10 Claims**



A valve for mixing two separate liquids, in which a discontinuous conduit provides a separably adjustable nozzle and seat, the seat forming the upstream end of a Venturi, and means for lateral entry into the conduit at the discontinuity. In a pair of separate containers for housing the liquids, one of the containers holds liquid under pressure and is connected with the conduit while the other container has a spigot connected with the lateral entry means. In a method and apparatus for cooling the liquids within different temperature ranges a closed refrigerant circuit includes coils encompassing the containers, throttling means preceding each coil, and temperature sensing means for each liquid, the temperature of the first liquid in the series controlling the operation of the fan of the condenser and the temperature of the second liquid controlling the overall operation of the circuit.

3,783,631

ABSORPTION HEAT EXCHANGE SYSTEMS, METHODS AND ABSORBENT COMPOSITIONS

Robert Modahl, Galesville, and Paul J. Lynch, La Crosse, both of Wis., assignors to The Trane Company, La Crosse, Wis.

Continuation-in-part of Ser. No. 168,870, Aug. 4, 1971, abandoned. This application Sept. 13, 1972, Ser. No. 288,788
Int. Cl. F25b *15/06*
U.S. Cl. 62—112 **19 Claims**

ABSORPTION RATE, gms H2O/100
INITIAL DRIVING FORCE, °F(MAP SOLUTION SATURATION TEMP. MINUS ABS. SOLUTION SATURATION TEMP.)
A - NO ADDITION
B - 1H,1H,7H-DODECAFLUORO-1- HEPTANOL
C - 1,1,1 -TRIFLUORO-2-OCTANOL
D - DODECAFLUORO-1-METHYL HEPTANOL -1
E - 2,2,3,3,4,4,5,5,6,6,7,7 DODECAFLUORO- 1,1 DIMETHYL HEPTANOL-1
F - 2,2,3,3,4,4,5,5,6,6 DECAFLUORO-2 METHYL HEPTANOL-1
G - 3,3,4,4,5,5,6,6,7,7,8,8 DODECAFLUORO-1- OCTANOL
H - 2,2,3,3,4,4,5,5 OCTAFLUORO-1-METHYL PENTANOL-3
J - 1,1,1 TRIFLUORO-2-NONANOL
K - 2 - (PENTAFLUOROPHENYL) ETHANOL
L - HEXAFLUORO -2- PHENYLISOPROPANOL
M - HEXAFLUORO -2 - (p- TOLYL) ISOPROPANOL

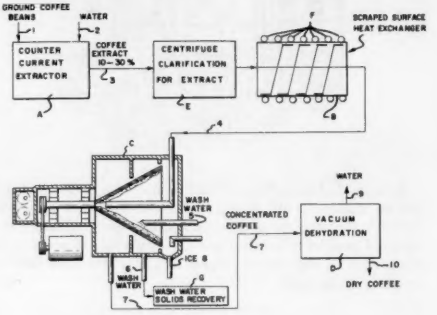
Absorption heat exchange systems and methods, and especially absorption refrigeration systems and methods, employing an absorbent comprised of an aqueous solution of a lithium halide salt and including at least one fluoroalcohol which is stable at high temperatures and which increases the rate of absorption in the absorber and the rate of heat transfer in the condenser for a given amount of surface.

3,783,632

ICE WASH APPARATUS

Richard G. Reimus, c/o P.O. Box 1500, Brandon, Manitoba, Canada, and Anthony Saporito, 11 Parker St., Warren, Pa.

Continuation of Ser. No. 889,231, Dec. 30, 1967, abandoned, which is a division of Ser. No. 763,058, Sept. 27, 1968, which is a division of Ser. No. 718,510, April 3, 1968, Pat. No. 3,432,308, which is a division of Ser. No. 511,173, , Pat. No. 3,381,302. This application May 19, 1971, Ser. No. 145,051
Int. Cl. A23f *1/06;* **B01d** *9/04*
U.S. Cl. 62—123 **6 Claims**



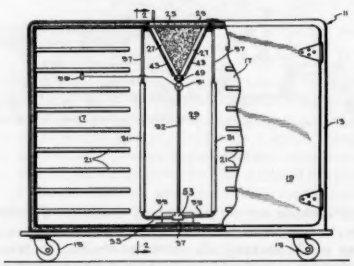
A system of apparatus for removing water from coffee and tea extract by first chilling to form a suspension of solids in the liquid is provided which forms a mixture of ice and liquid. The ice is separated in a centrifuge and is washed.

3,783,633

CO^2 REFRIGERATION SYSTEM

Emmett P. Glynn, Lemont, and Howard L. Hsu, Hickory Hills, both of Ill., assignors to Liquid Carbonic Corporaiton, Chicago, Ill.

Division of Ser. No. 66,961, Aug. 26, 1970, Pat. No. 3,695,056. This application Aug. 11, 1972, Ser. No. 279,968
Int. Cl. F25d *3/12*
U.S. Cl. 62—168 **4 Claims**



Refrigeration apparatus utilizing solid carbon dioxide as a refrigerant comprising a pair of refrigeration compartments, a solid carbon dioxide hopper defined by a pair of hollow con-

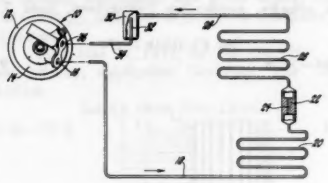
densers arranged in the shape of a V for cooling a circulating heat-exchange fluid. A pair of evaporators vertically below the hopper define a chimney between compartments for the circulation of air being cooled. A blower may be used to control air circulation.

3,783,634

HEAD PRESSURE BIASED CONTROL VALVE

John H. Heidorn, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 14, 1972, Ser. No. 289,000
Int. Cl. F25b *41/04*
U.S. Cl. 62—217 **4 Claims**



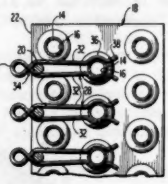
An automatic control for preventing freezing of the evaporator of an air conditioner including a piston type main valve within the compressor inlet. One side of the main valve is exposed to a control pressure in a space connected by a port to compressor inlet. A control valve in this port is operated by an expandable, evacuated bellows which opens and closes the valve to maintain a substantially constant pressure in the space. A plunger of small cross section is aligned with the control valve and is exposed to the high pressure discharge of the compressor to tend to open the control valve in response to increased discharge pressure. This lowers the control pressure and allows the main valve to open earlier than during lower discharge pressure operation.

3,783,635

REPLACEABLE DEFROST HEATER FOR FIN AND TUBE EVAPORATOR AND SPRING RETAINING CLIP FOR SAME

John L. Perez, Bridgewater, Va., assignor to Dunham-Bush, Inc., Harrisonburg, Va.

Filed July 25, 1972, Ser. No. 275,005
Int. Cl. B25b *27/14*
U.S. Cl. 62—276 **8 Claims**



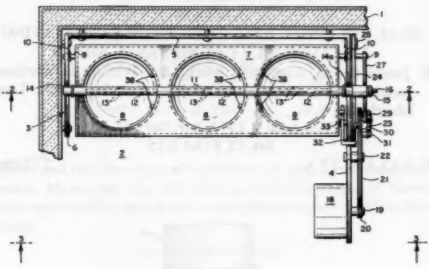
Spring retaining clips maintain an electrical heating wire in contact with the side edges of the fins in a fin and tube refrigeration evaporator coil. The U-shaped spring retaining clips project within the spaced fins with the free ends grasping opposed sides of a longitudinally extending tube carried by the right angle, spaced heat transfer fins.

3,783,636

AUTOMATIC ICECUBE MAKER

Erling B. Archer, Flushing, N.Y., assignor to Eric Archer, Town of Old Saybrook, Middlesex, Conn.

Filed June 22, 1971, Ser. No. 155,592
Int. Cl. F25c *1/10*
U.S. Cl. 62—353 **4 Claims**



An automatic icecube maker having a tray that tilts freely during each ejection.

An elongated divider unit moving freely vertically during the ejection period. same having one divider nestling within each tray mold, dividing each mold into two sections while the tray remains horizontal. Each divider being provided with means to release the cubes from the molds when mechanical force is being applied to the unit, and means to release the cubes from the deviders.

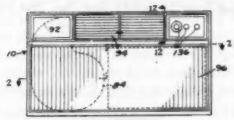
Means to release the tray to a vertical position to allow the cubes to fall into the harvesting bin, and means to return the tray and deviders into the normal freezing position.

3,783,637

ROOM AIR CONDITIONER

Norman W. Woods, c/o Keep Rite Products Ltd., Brantford, Ontario, Canada

Continuation-in-part of Ser. No. 21,105, March 19, 1970, abandoned. This application Mar. 6, 1972, Ser. No. 231,905
Int. Cl. F25d *17/06*
U.S. Cl. 62—427 **19 Claims**



A room air conditioner having a relatively short front to back dimension made possible by a novel compact arrangement of the condenser, compressor and evaporator on the chassis of the unit in combination with a novel air flow pattern through the unit. The interior of the air conditioner casing is divided lengthwise by an upright partition into a rear compartment in which the condenser and compressor are located and a front compartment in which the evaporator and blower are arranged. The blower is of the axial intake, radial discharge type and has its inlet facing the partition rather than the front grille of the unit so as to reduce the noise incident to the high velocity air stream. The unit also includes a pair of ventilating doors on the partition arranged to be operated by a single manually operable control knob for selectively admitting outside air to the room and discharging room air to the outside.

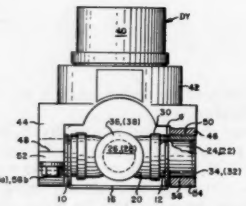
The front grille inside the room is provided with a novel air scoop and vane arrangement for directing the conditioned air effectively in the desired direction. The air conditioner also includes in the condenser compartment a slinger ring and deflector arrangement for picking up evaporator condensate and depositing it on the coils of the condenser to evaporate the condensate and discharge it from the unit with the condenser cooling air.

3,783,638

DUAL RETAINING RING DEVICE FOR FACILITATING THE ASSEMBLY OF UNIVERSAL JOINTS

E. James Doran, Southfield, Mich., and Wallace H. Berliner, Jericho, N.Y., assignors to Waldes Kohinoor, Inc., Long Island City, N.Y.

Filed June 9, 1972, Ser. No. 261,333
Int. Cl. F16d *3/26*
U.S. Cl. 69—17 A **7 Claims**



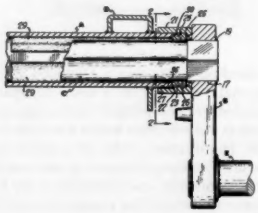
For use in holding two grease (bearing) cups in place on the trunnions of the cross of a universal joint prior to final clamping of a yoke thereto, a dual retaining ring device comprising two like external spring retaining rings of the radially installable type permanently secured one to the other in spaced-apart, parallel plane, coaxial, gap-aligned relationship by a substantially non-resilient strap-form bridge preferably fashioned integral with said rings and being connected to corresponding outer-edge points or portions thereof.

3,783,639

RESILIENT JOINT

Derek J. Goodman, Ingersoll, Ontario, and Gerald N. Farr, Woodstock, Ontario, both of Canada, assignors to Ingersoll Machine and Tool Company Limited, Ingersoll, Ontario, Canada

Filed June 21, 1972, Ser. No. 264,742
Int. Cl. F16d *3/14*
U.S. Cl. 64—27 NM **5 Claims**



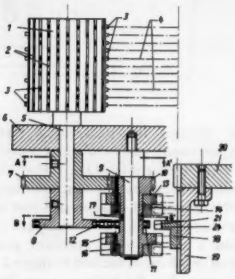
An elastic joint of the type using interposed elastomeric springs for resiliently restraining against relative rotation an outer tubular member and an inner polygonal member connected to a torsion arm and means for connecting the inner and outer members in relative rotational relationship while maintaining their coaxial alignment. The connecting means is in the form of a cup provided with an inner cylindrical pocket rotatably containing a ring with a polygonal bore fitting about the inner member and an outer socket non-rotatably receiving the end of the outer member. The joint is assembled by sliding the cup and ring over the inner member followed by sliding the outer member and rubber springs over the inner member until the end of the outer member is received in the socket.

3,783,640

MECHANISM FOR THE CONTROL OF REVERSIBLE STEP-BY-STEP ROTATION OF SELECTOR DRUMS OF CIRCULAR KNITTING MACHINES

Norbert Paul Bourgeois, Troyes, France, assignor to Etudes et Bonneterie S.A.

Filed June 1, 1972, Ser. No. 258,783
Claims priority, application Switzerland, June 7, 1971, 8250/71
Int. Cl. D04b *15/74*
U.S. Cl. 66—50 B **9 Claims**



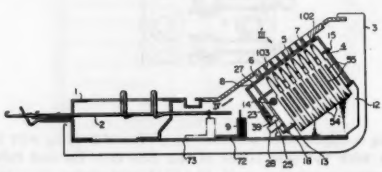
Each selector drum of a circular knitting machine is associated with a control device including two coaxial pairs of axially spaced apart like toothed wheels, the wheels of each pair being fixed together with the teeth of one wheel angularly dephased by half a pitch in relation to those of the other. A cam able to selectively occupy four discrete positions is mounted on a rotatable crown so that each revolution it may angularly displace a selected wheel by half a pitch or a pitch depending on the initial position thereof, this displacement being transmitted into a rotation of the drum by one or two steps of its selection members in a selected direction according to the pair of wheels acted upon.

3,783,641

KNITTING MACHINE

Hiroshi Kitazawa, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya-shi, Japan

Filed Dec. 28, 1971, Ser. No. 213,010
Claims priority, application Japan, Dec. 29, 1970, 45/124567
Int. Cl. D04b *7/00*
U.S. Cl. 66—60 R **9 Claims**



For reading or memorizing a pattern perforated in rows in a card, pattern-reading members having pointed ends in a row

are successively fed from a first to an arbitrarily selectable last row of the irregular perforations making up the pattern. The thus memorized pattern is conveyed to needle-selecting members including pattern plates which have projections formed at constant spacings thereon. Some of the pattern plates associated with those of the pattern-reading members which correspond to the perforations in each row are operated to select needles that are required for the knitting operation in accordance with the pattern, the selected needles being urged to their operative positions by the projections on the pattern plates.

3,783,642

METHOD AND APPARATUS FOR DATA TRANSMISSION IN KNITTING MACHINES

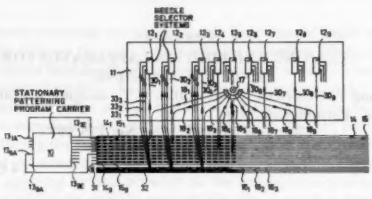
Wilhelm Hadam, Reutlingen, and Ernst Goller, Pfullingen, both of Germany, assignors to H. Stoll & Company, Reutlingen, Germany

Filed Mar. 21, 1972, Ser. No. 236,599

Claims priority, application Germany, Mar. 23, 1971, P 21 14 013.6

Int. Cl. D04b *7/00, 15/66*

U.S. Cl. 66—75 R **14 Claims**



A method for transmitting data between an electronic needle selector system located on the carriage of a flat knitting machine and a stationary programmer unit, provides for transmission of the data optically and conversion of the data so transmitted into corresponding electrical signals using photoelectric transducers. The optical system includes pairs of light conducting rods which extend parallel to the direction of travel of the carriage and which serve to conduct light signals to and back from the needle selector system. The light conductor rods preferably include light transmissive side and end walls, the side walls of the first of rods of each pair of rods comprising a checkered pattern of alternate light transparent and light opaque sections the pitch of which is equal to the pitch of needles in the needle bed or beds of the machine.

3,783,643

KNITTING MACHINES HAVING LINEARLY ARRANGED NEEDLES

Peter Francis Ladyman, Long Eaton, and Dennis Gaunt, Berry Hill, both of England, assignors to Stibbe-Monk Developments Limited, Leicester, England

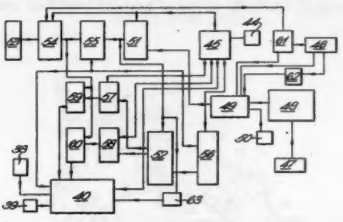
Filed Apr. 13, 1972, Ser. No. 243,591

Claims priority, application Great Britain, Apr. 23, 1972, 11112/72

Int. Cl. D04b *11/06*

U.S. Cl. 66—89 **9 Claims**

In a knitting machine having at least one set of linearly arranged needles and motor operated means for moving the selvedge stop and/or fashioning points of said machine during the production of a series of garment blanks, the provision of at least one coded element associated with said needles, reading means adapted to scan said coded element and to transmit a signal to a comparator indicating the actual position of said stop and/or points, at least one coded tape, other reading means adapted to scan said tape and to transmit a signal to said comparator indicating a position to which said stop and/or said points are to be moved, and means which utilize said information imparted to said comparator to control the



speed, and the direction of operation, of said motor operated means. Means are also provided to limit the extent of movement imparted by said motor controlled means to said stop/or points.

3,783,644

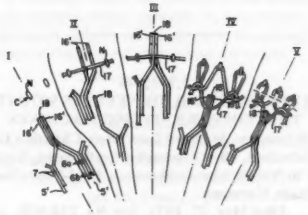
LOOP TRANSFER MEANS FOR CIRCULAR KNITTING MACHINES

Heinz Mutze, Karl-Marx-Stadt; Gerhard Barth, Dittersdorf, and Klaus Kertzscher, Zschopau, all of Germany, assignors to Veb Wirkmaschinenbau Karl-Marx-Stadt, Karl-Marx-Stadt, Germany

Continuation-in-part of Ser. No. 856,083, Sept. 8, 1969, abandoned. This application Aug. 2, 1971, Ser. No. 169,573

Int. Cl. D04b *15/02, 9/56*

U.S. Cl. 66—95 **2 Claims**



Loop transfer jacks for circular knitting machines, especially single cylinder machines for closing tubular knitted goods, wherein the jacks are arranged in pairs, one jack of each pair for loop receiving, the other for loop delivering. The jacks are separately moveable back and forth in a pivotable half dial. The jacks of a pair have tips which provide cooperating hooks and tongues. These are constructed and arranged in such a manner that at least during the pivoting of the half dial the hooks and tongues have vertical surfaces contacting one another in a common plane, and have additional surfaces which provide a substantially continuous, smooth and unobstructed sliding path for the yarn loop to be transferred.

3,783,645

SINKER OPERATING CAMS FOR CIRCULAR KNITTING MACHINES

Massimo Bianchi, Firenze, Italy, assignor to G. Billi & C.S.p.A., Firenze, Italy

Filed July 15, 1971, Ser. No. 163,007

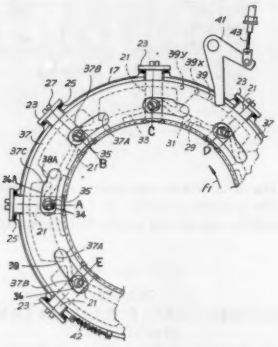
Claims priority, application Italy, July 20, 1970, 9587 A/70

Int. Cl. D04b *15/06*

U.S. Cl. 66—108 R **5 Claims**

The sinker operating cams at each feed of a multiple feed circular knitting machine are mounted upon a slide, the slides

are supported by and are movable radially of the sinker cam ring of the machine whereby the slides and the sinker operating cams thereon may be selectively moved at each of the feeds to each of a pair of radial positions. An annular plate circumferentially movable to three angular positions atop the



sinker cam ring is operatively related to a tappet on each of the slides whereby in one position of the plate all of the slides are in their outer radial position, in a second position of the plate alternate slides only are in their inner radial position, and in the third position of the plate all of the slides are in their inner radial position.

3,783,646

HOLDER HAVING SLIDE NEEDLES MOUNTED THEREIN FOR KNITTING MACHINES

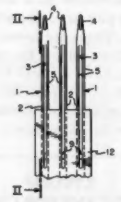
Siegfried Naumann; Manfred Lauckner; Christian Golbs, and Harry Schubert, all of Limbach-Oberfrohnau, Germany, assignors to Veb Wirkmaschinenbau Karl-Marx-Stadt, Karl-Marx-Stadt, Germany

Filed Mar. 27, 1972, Ser. No. 238,098

Claims priority, application Germany, June 23, 1971, WPD 046/156007

Int. Cl. D04b *35/04, 35/06*

U.S. Cl. 66—120 **5 Claims**



In a knitting machine, a needle holder having grooves, a needle mounted in each of the grooves, each of the needles having a head, a shaft and a groove extending into the head and the shaft, the needle groove being laterally bounded by parallel side walls, the side walls being thicker in the shaft than in the head.

3,783,647

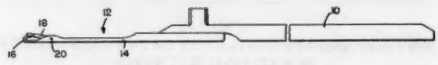
KNITTING MACHINE NEEDLE

James Peter Torrant, and Carl F. Benson, both of Torrington, Conn., assignors to The Torrington Company, Torrington, Conn.

Filed June 29, 1972, Ser. No. 267,409

Int. Cl. D04b *35/02*

U.S. Cl. 66—123 **2 Claims**



A butt section made of flat stock is fused to a hook and blade section made of wire stock. The fusion is made along longitudinal portions of the two sections.

3,783,648

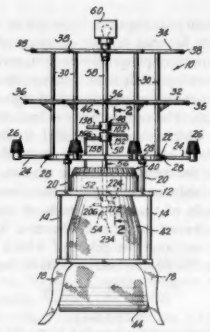
CLEANING AND LIGHTING APPARATUS FOR KNITTING MACHINE

Roland P. Heinrichs, Lindenhurst, N.Y., assignor to Uniwave, Inc., Farmingdale, N.Y.

Filed July 27, 1972, Ser. No. 275,597

Int. Cl. D04b *35/32, 35/00*

U.S. Cl. 66—168 **14 Claims**



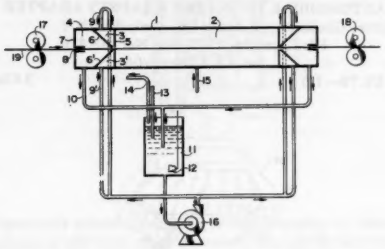
A knitting machine having a rotatable part is provided with an axially extending conduit positioned in substantial alignment with the axis of rotation of said rotating part and extending therethrough. The conduit is provided with a cable channel and a separate air passage. A rotary joint is mounted on said conduit for rotation about said axis of rotation, said mounting permitting selective axial displacement of said rotary joint along said conduit to one end thereof for the removal of said rotary joint therefrom. Electrical cable passes through said cable channel to a lamp releasably mounted on the conduit at said one end thereof. The rotary joint is mounted in registration with an opening in said conduit providing communication between the air passage in the conduit and an air passage in the rotary joint for directing air under pressure to the portions of the machine to be cleaned.

3,783,649

APPARATUS FOR CONTINUOUSLY TREATING FIBROUS MATERIALS UNDER PRESSURE

Katsuo Yamamoto; Hideo Sato; Toshio Iwasa; Hisao Nakamura, all of Fujishi, and Katsuhiro Adachi, Moriyamashi, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sept. 27, 1972, Ser. No. 292,500
Claims priority, application Japan, Oct. 7, 1971, 46/78340
Int. Cl. D06c *1/10*
U.S. Cl. 68—5 E 3 Claims



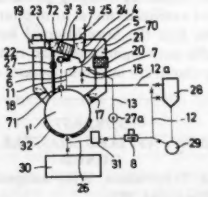
Fibrous materials are continuously heat-treated under pressure by passage through a heat-treating chamber filled with a pressurized heating fluid and provided with at least a pair of symmetrical sealing chambers which are located at the inlet part and the outlet part of the heat-treating chamber. Sealing fluid is introduced into the sealing chambers through pipes for introducing the sealing fluid; and ejected from the clearances A and A′ toward the outside of the heat-treating chamber, while applying a static pressure to the atmosphere around the fibrous materials passing through the slits formed in the central part of the inlet and outlet of the heat-treating chamber. Leakage of the pressurized heating fluid from the heat-treating chamber can be thereby prevented, and the fibrous materials can be heat-treated without any damages.

3,783,650

APPARATUS FOR THE PROCESSING OF TEXTILES, FIBRES AND THE LIKE

Hans-Peter Weber, Basel; Alfred Litzler, Itingen; Jean Hertig, Basel; Branimir Milicevic, Riehen, all of Switzerland; Heinrich Fuhring, Augsburg, and Johannes-Helmut Sieber, Aystetten, both of Germany, assignors to Ciba Limited and Bowe Bohler & Weber KG, Maschinenfabrik, Basel, Switzerland

Filed June 2, 1970, Ser. No. 42,818
Claims priority, application Switzerland, June 2, 1969, 8327/69; Germany, June 20, 1969, P 19 31 353.2
Int. Cl. D06f *43/08*
U.S. Cl. 68—18 C 8 Claims



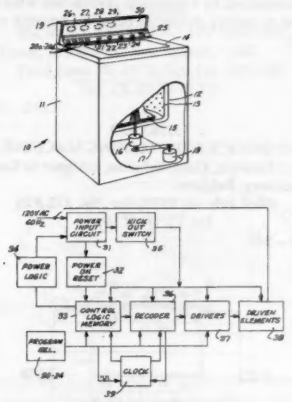
The invention relates to a plant for the processing of textiles, fibers or the like in a liquor, in which an organic solvent immiscible with water, having a specific gravity greater than 1, and forming azeotropic mixtures with water is used.

3,783,651

DIGITAL LOGIC CONTROL FOR AUTOMATIC WASHER

Joseph Karklys, Saint Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 27, 1971, Ser. No. 211,885
Int. Cl. D06f *33/02*
U.S. Cl. 68—12 R 11 Claims



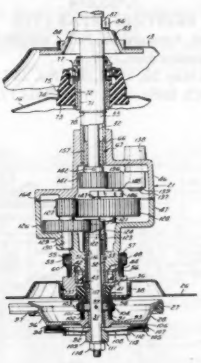
An automatic washer employs a digital control circuit comprising a programmable memory having an alterable information content controlled by operator actuated selection switches. A decoder reads the output of the memory and is operable to control driver circuits in accordance with the selected program, which driver circuits accordingly control the operation of the associated machine elements.

3,783,652

WASHING MACHINE

Ralph L. Archbold, Euclid, Ohio, assignor to Franklin Manufacturing Company, St. Cloud, Minn.

Filed Apr. 28, 1972, Ser. No. 248,422
Int. Cl. D06f *23/04*
U.S. Cl. 68—23.7 3 Claims



A power drive in a washing machine oscillates an agitator with a positive drive and spins a basket with a limited torque for gradual spin-up. The arrangement includes a transmission for selectively driving either the agitator or the basket as

determined by the direction of rotational input. The drive to the transmission includes a one-way clutch adapted to positively drive the transmission in the agitation direction and a slip clutch to drive the basket with a predetermined torque in the opposite spin direction. A rotatable housing of the transmission forms both a sealed enclosure and a rigid structure in which a gear train is mounted. The housing has two mating sections in each of which are mounted spatially independent gear sets connected by a common pivotal link whereby critical gear center to center distances between housing sections are eliminated.

3,783,653

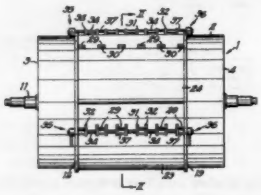
LOCKING DEVICE FOR WASHING MACHINE DRUMS

Jan Armand Haerick, Gent, Belgium, assignor to Em. D'Hooge N.V., Ledeberg, Belgium

Filed July 18, 1972, Ser. No. 272,826

Int. Cl. D06f *39/14*

U.S. Cl. 68—145 **7 Claims**



Improved locking device for washing machine drums of the type in which said drum's periphery is fitted with one or more access doors, characterized in that it mainly consists of one or more hook-shaped components fitted to one side border of a curved door; of one shaft assembled in a rotary manner with regard to the drum wall and, fitted to this shaft, of devices operating together with said hook-shaped components when the door involved is being closed, all this for the purpose of both locking and tightening said door in its guides.

3,783,654

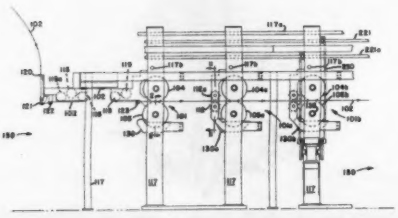
PRINTING APPARATUS

Allan H. Crawford, Amsterdam, N.Y., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.

Filed May 26, 1972, Ser. No. 257,089

Int. Cl. B05c *1/04, 1/06;* B41f *17/10*

U.S. Cl. 68—200 **50 Claims**



A method and apparatus for printing a plurality of single warp ends of yarn wherein the ends of yarn are passed through a series of printing assemblies, each assembly including a pair of roll-like assemblies at least one of which roll-like assemblies carries a plurality of reciprocally movable pads thereon which can be selectively, reciprocally moved in a pre-determined manner in a direction normal to the longitudinal axis of the roll-like assembly to contact the yarn being printed on. Control of the pads is, in turn, made possible by a plurality of patterned program bars which can be selectively moved in a predetermined manner in a direction normal to the reciprocal direction of movement of the pads.

3,783,655

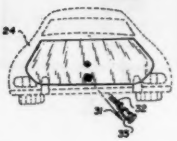
AUTOMOBILE TRUNK LOCK SAFETY ADAPTER

Salvatore Giannetto, 35 Acorn Ln., Plainview, N.Y.

Filed June 16, 1972, Ser. No. 263,476

Int. Cl. E05b *63/00*

U.S. Cl. 70—1.5 **3 Claims**



An adapter safeties an automobile trunk lock when the lock cylinder is forcibly removed. A spring on the lock rod serves as a secondary precaution.

3,783,656

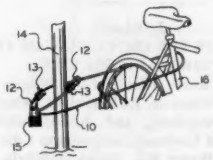
LOOPED CABLE END CLAMP

Daniel J. Foote, Wauwatosa, Wis., assignor to Master Lock Company, Milwaukee, Wis.

Filed Aug. 14, 1972, Ser. No. 280,328

Int. Cl. E05b *73/00*

U.S. Cl. 70—18 **4 Claims**



The opposite looped ends of an article protecting cable, which can be brought into adjacency for the reception of a lock, have clamps applied thereto which are polygonal with the angles between adjacent sides being obtuse. Bores extending longitudinally through the clamps receive the cable ends which form the loops. By swaging portions of all sides of a clamp, displaced extents of metal form internal protuberances whose ends bite into the bore-inserted extents of the cable ends in inwardly converging, angular relationship and thus very effectively clamp the inserted portions of the cable ends.

3,783,657

PADLOCK BODY AFFIXED SHACKLE ENVELOPING GUARD

Daniel J. Foote, Wauwatosa, Wis., assignor to Master Lock Company, Milwaukee, Wis.

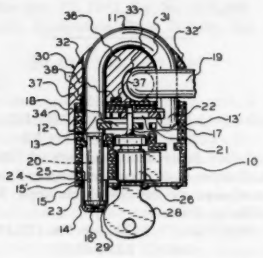
Filed Oct. 16, 1972, Ser. No. 297,714

Int. Cl. E05b *67/02, 67/33*

U.S. Cl. 70—52 **7 Claims**

To provide a metallic protector for substantially enveloping the major exposed portion of a retracted and locked padlock

shackle an eccentrically shaped guard is affixed to the end portion of the padlock body in covering relation to the normally exposed portion of the shackle. The outer end of the guard is slotted so that when the shackle is unlocked and

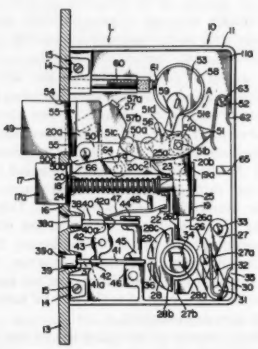


reciprocated outwardly for staple eye engaging or releasing purposes, it will freely move outwardly through the slotted end of the guard while the guard remains immovably affixed to the padlock body.

3,783,658
DOOR LOCK

Waichi Wada, 35-29, 1-chome, Ikegami, Ohta-ku, Tokyo, Japan

Filed Feb. 23, 1972, Ser. No. 228,713
Int. Cl. E05b *59/02*
U.S. Cl. 70—110 **4 Claims**

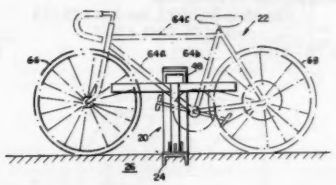


A door lock in which there is provided a latch bolt, a dead bolt, a first lever secured to the dead bolt and having an abutting portion being capable of abutting against the rear portion of the latch bolt, a second lever pivotably connected at one end to the first lever, abutting means on the second lever and being capable of abutting against the rear portion of the dead bolt, and a third lever pivotally connected at one end to the other end of said second lever and rockable about its axis. The second lever and the third levers move in a manner of toggle levers when the third lever is rocked about its axis and, when the dead bolt is in its projected position, the first, second and third levers are disposed in such a manner that the first lever abuts against the rear surface of the latch bolt and an external force acting directly on the dead bolt to retract the same will tend to prevent rotation of the second lever and the third lever by abutting engagement of the abutting means with the rear portion of the dead bolt whereby both the latch bolt and the dead bolt are restrained against retraction.

3,783,659
BICYCLE SECURING APPARATUS

Gerald F. Rossi, 715 4th St., San Ramon, Calif.

Filed June 29, 1972, Ser. No. 267,508
Int. Cl. E05b *71/00*
U.S. Cl. 70—234 **7 Claims**

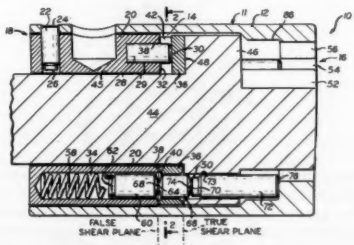


A device for locking a bicycle in place has a base fixed relative to the ground, and a pair of arms upwardly extending from the base. Each arm has a cross bar fixed to its upper end, and one arm is pivotally attached to the base so as to be movable towards and away from the other arm. The cross bar fixed to the pivotable arm has three shafts extending therefrom generally toward the other cross bar. When the pivotable arm is positioned away from the other arm, the bicycle may be positioned between the arms and is in proper position for locking. Swinging of the pivotable arm toward the other arm brings the shafts through the body of the bicycle, one passing through the frame of the bicycle and the other two passing through the front and rear wheels respectively. The extended ends of the shaft are brought into close proximity with the other cross bar by the pivoting, and a lock is provided to hold the ends of the shafts in such close proximity so that the bicycle may be secured between the arms.

3,783,660
PICK RESISTANT LOCK

Vincent A. Gill, Montclair, N.J., assignor to Unican Security Systems, Ltd., Montreal, Canada

Filed Apr. 20, 1972, Ser. No. 245,736
Int. Cl. E05b *27/08, 63/00*
U.S. Cl. 70—363 **3 Claims**



A pick resistant lock having a housing and a rotatable spindle therewithin, each having a registrable aperture. Interposed

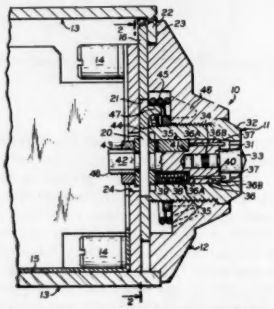
between the housing and spindle is a ring that is rotatable relative to said housing a limited distance and has an aperture registrable with said housing and spindle apertures. A tumbler is disposed in said registrable apertures and is biased to a normal position in which said spindle and ring must move together. When the spindle is torqued to pick the lock, the spindle and ring will rotate said limited distance to permit the apertures therein, and the tumbler, to move out of register with said housing aperture and thus prevent the unlocking of the lock. The tumbler is further provided with a chamfered end so that it cannot be felt when the tumbler moves into said housing aperture.

3,783,661

ANTI-PICK LOCK ASSEMBLY

Harry Greenwald, Whitestone, N.Y., assignor to Walter Kidde & Company, Inc., Clifton, N.J.

Filed July 26, 1972, Ser. No. 275,218
Int. Cl. E05b *63/00*
U.S. Cl. 70—419 **2 Claims**



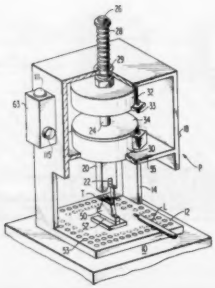
An anti-pick lock assembly in which the rotor of a tumbler lock is biased toward its locking position by a torsion spring. The spring bias force is sufficient to prevent the tumbler rotor from being set at a displacement within the working tolerance of the internal lock parts that allows the code pins to be manipulated one at a time into their release positions by a pick tool.

3,783,662

CONTROL CIRCUIT FOR MAGNETIC ACTUATOR

Joseph Richard Keller, and Bruce Cameron Longenecker, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 15, 1972, Ser. No. 253,039
Int. Cl. B21d *55/00*
U.S. Cl. 72—1 **10 Claims**



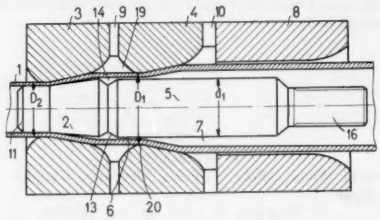
A control circuit for a magnetically actuated die closing apparatus, featuring force responsive die closing cycle termination circuitry as well as safety features for protecting the operator and the apparatus. The safety features include an electro-optic guard and clock circuit. The initial let down force of the ram as the dies make initial closing contact with the workpiece is limited by a let-down circuit incorporated into the control circuit.

3,783,663

METHOD OF AND DEVICE FOR THE DRAWING OF TUBULAR WORKPIECES

Tadeusz Prajsnar; Jozef Rulinski, both of Gliwice; Edward Zglobicki, Zabrze, and Bronislaw Sojka, Zawadzkie, all of Poland, assignors to Instytut Metalurgii Zelaza im. St. Staszica, Gliwice, Poland

Filed Mar. 17, 1971, Ser. No. 125,191
Int. Cl. B21b *45/02*
U.S. Cl. 72—41 **7 Claims**



A tubular workpiece, to be reduced in diameter and wall thickness, is drawn through a progressively narrowing gap formed between a die and a mandrel coaxial therewith, the die and the mandrel having confronting annular undercuts in an intermediate region of the gap whereby the latter is widened to form storage chambers for lubricant entrained under pressure by the inner and outer surfaces of the advancing workpiece. The lubricant is supplied to the outer storage chamber through a reservoir formed by a sleeve upstream of the entrance end of the die while being also funneled into the inner storage chamber through a narrowing clearance between the tail end of the mandrel and the workpiece. This clearance is surrounded by a converging first die section whose smallest diameter, preceding the undercut, is larger than the exit diameter of a converging second die portion in which the workpiece is shaped to its final dimension; the inner and outer workpiece surfaces are coated with films of lubricant leaving the respective storage chambers.

The invention permits to introduction of the plug into the tube unconstrainedly and to obtention an optional small clearance beweeen the plug and the tube, whereby the drawing process operates under conditions of hydrodynamic lubrication. The method of drawing consists in bending the tube around the bearing part of the plug by means of a bearing-working tube drawing die situated immediately in ahead of the working tube drawing die which has a cross section reducing in co-operation with the plug and the tube wall.

The plug for application of the method has an initial entry part in the form of a cone and a cylindrical-and-conical part serving for reduction of the tube-wall thickness, behind which a pressing part is situated with at least one pressure-regulating undercut being provided to maintain and to govern the pressure.

3,783,664

PROCESS FOR CONTROL OF LUBRICANTS IN AN ALUMINIUM ROLLING MILL

Krishna Chandra Tripathi, Deddington, England, assignor to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed Jan. 12, 1972, Ser. No. 217,248
Claims priority, application Great Britain, Jan. 13, 1971, 1767/71
Int. Cl. C10m *1/06, 1/08*
U.S. Cl. 72—42 3 Claims

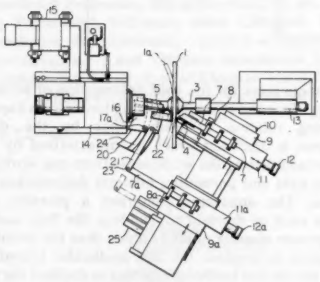
In the operation of an aluminum rolling mill, in which the lubricant is an oil-in-water emulsion, having an oil phase consisting of a hydrocarbon oil base, containing a free fatty acid and an amino-soap, the average particle size of the oil phase particles is periodically adjusted by the addition to the water phase either of multivalent metallic ion to increase particle size or of an alkali metal soap or material to generate an alkali metal soap by reaction with free fatty acid to reduce particle size so as to retain the particle size within an optimum range.

3,783,665

SPINNING MACHINE

Yoshimi Ashizawa, Kanagawa, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed July 31, 1972, Ser. No. 276,797
Claims priority, application Japan, Aug. 11, 1971, 46/60768
Int. Cl. B21d *22/18*
U.S. Cl. 72—81 3 Claims



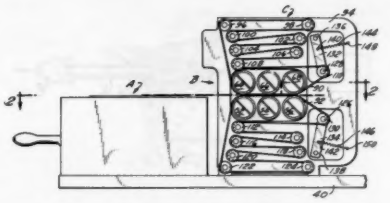
In a spinning machine for shaping a blank into a product of a desired configuration without using a metal mold, there are provided a rotary shaft, a push rod, the rotary shaft and push rod cooperating to clamp therebetween a flat plate shaped blank for rotating the same, a back-up roller having a peripheral contour conforming to a portion of the inside contour of a spinned product, means to urge the back-up roller against one side of the blank, means to move the back-up roller along a predetermined path conforming to the inside contour of the product, a work roll having a working edge of smaller radius of curvature than said back-up roller, means to urge the work roll against the opposite side of the blank with a predtermined definite axial spacing between the work roll and the back-up roller and means for moving the work roll to follow the movement of the back-up roller while maintaining the definite axial spacing with respect to the back-up roller.

3,783,666

APPARATUS FOR FABRICATING LITHIUM ANODES

Martin G. Rosansky, Monsey, and Bruce E. Jagid, Whitestone, both of N.Y., assignors to Power Conversion, Inc., Tuckahoe, N.Y.

Filed Dec. 1, 1971, Ser. No. 203,530
Int. Cl. B21b *1/00*
U.S. Cl. 72—199 7 Claims



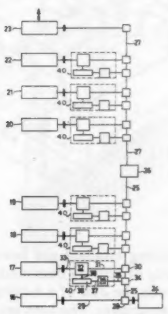
An apparatus and method for rolling and laminating highly malleable metals such as lithium. A plastic belt is interposed between the rollers and the lithium during the rolling operation to prevent the lithium from adhering to the roller surfaces.

3,783,667

APPARATUS FOR STRAIGHTENING METAL BY STRETCHING

Curt Munchbach, Pforzheim-Sonnenberg, Germany, assignor to Irma Ungerer, Pforzheim-Brotzingen, Germany

Filed Mar. 31, 1972, Ser. No. 240,135
Claims priority, application Germany, Apr. 14, 1971, P 21 18 051.8
Int. Cl. B21d *1/02*; B21b *39/08*
U.S. Cl. 72—160 4 Claims



In an apparatus for straightening a continuously running metal strip with a stretching operation, there provided a hold-back roll assembly and a drawing roll assembly; every roll in both roll assemblies has the same diameter and is, with the exception of the fastest roll in one assembly and the slowest roll in the other assembly, associated with a separate differential gearing, the output rpm of which is individually variable by a regulating device in accordance with the required rpm increase or rpm decrease of the associated roll with respect to the adjacent roll.

3,783,668

VIBRATORY FORMING

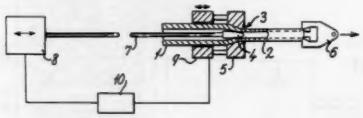
Graham Robert Dawson, Bewdley, and Dennis Hugh Sansome, Sutton Coldfield, both of England, assignors to National Research Development Corporation, London, England

Filed Mar. 17, 1972, Ser. No. 235,546

Claims priority, application Great Britain, Mar. 18, 1971, 7201/71

Int. Cl. B21d *26/02*; B21c *1/24*

U.S. Cl. 72—283 3 Claims



A vibratory forming method, and apparatus, in which material is drawn across a pair of forming tools which are both vibrated. The phase angle between the two vibrations is neither zero nor 180°, but is adjusted to a defined intermediate value to increase the efficiency of the process, especially by minimising the drawing force required. The invention applies particularly to the plug drawing of metal tube.

3,783,669

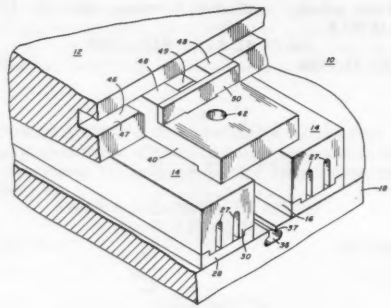
UNDERFIRED FORGING DIE HEATER

Charles P. Furney, Jr., Delmont, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed June 12, 1972, Ser. No. 261,590

Int. Cl. B21j *1/06*

U.S. Cl. 72—342 3 Claims



A structure providing efficient gas heating of forging dies comprising a plurality of bearing bars made of a high strength metal located between the dies of a forging press and respective die supporting structures. The bars are spaced apart to accommodate gas fired burners and layers of heat insulation in such a manner that only the bearing bars receive forging loads, the layers of insulation and the burners, being accommodated in the spaces between the bearing bars, receive no forging loads. The bearing bars are provided with longitudinally extending openings for preheating and conducting the gas (or gas-air mixture) to the burners, and for limiting the conduction of heat from the dies to the die supporting structures. Each die supporting structure includes a plate or platen provided with slots adapted to receive and retain die clamping bolts, the bolts being located between adjacent bearing bars, and extending from the plate to and through respective clamps engaging the edges of the die and portions of at least two adjacent bearing bars extending beyond the edges of the die.

3,783,670

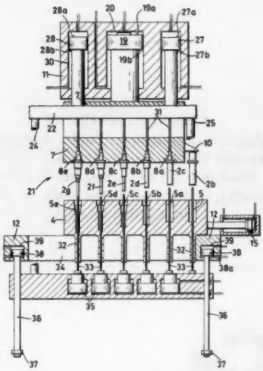
APPARATUS FOR THE TRANSFER OF WORKPIECES IN A MULTISTAGE PRESS FOR THE COLD DEFORMATION BY MEANS OF COLD EXTRUSION AND THE LIKE

Kurt Nickrawietz, Pattscheid, Germany, assignor to Eumuco Aktiengesellschaft fur Maschinenbau, Leverkusen-Schlebusch, Germany

Filed Aug. 21, 1972, Ser. No. 282,183

Int. Cl. B21d *45/00*

U.S. Cl. 72—346 5 Claims



A multistage press for the cold deformation of workpieces comprising a first and second opposing toolholders capable of reciprocating relative to each other by the distance therebetween is disclosed which is characterized by an apparatus for transferring the workpieces from one working station to the next and permitting bilateral deformation of the workpieces. The apparatus comprises a plurality of die recesses in each of the said toolholders, the first toolholder having a greater number of die recesses than the second toolholder; means to displace the first toolholder laterally with respect to the second toolholder; means to displace the second toolholder longitudinally with respect to said first toolholder; ejector means associated with each die recess in the two toolholders; and an ejector press in operative communication with the ejector means and being coordinated with the deformation press to alternately transfer the workpieces from one toolholder to the other.

3,783,671

APPARATUS FOR SIZING JOINT RINGS FOR CYLINDRICAL PIPES

Homer C. Lumborn, Glendora, Calif., assignor to Curwood, Inc., New London, Wis.

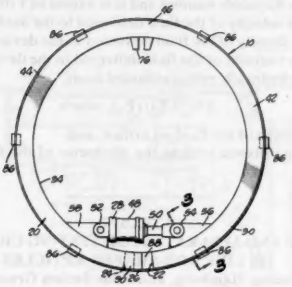
Filed Feb. 28, 1972, Ser. No. 229,907

Int. Cl. B21d *41/02*

U.S. Cl. 72—392 22 Claims

A method and apparatus for sizing steel joint rings welded to the ends of cylindrical pipes. A substantially closed integral ring member is used within a joint ring and expanded out-

wardly thereagainst. A force applying means, such as a hydraulic cylinder, applies a controlled outward force to the



ring member which distributes the force in a radially outward direction against the inner circumference of the joint ring for the desired sizing thereof.

3,783,672

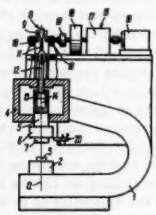
HIGH-SPEED MACHINES FOR SHAPING METALS WHICH EMPLOY THE ENERGY OF HIGH-PRESSURE GAS

Anatoly Sergeevich Morgolenko, ulitsa Chkalova, 15; Vadim Grigorievich Kononenko, ulitsa Chkalova, 15, kv. 12; Igor Grigorievich Fedosenko, 602 mikroraion, 51, kv. 206; Gennady Dmitrievich Selivanov, ulitsa Chkalova, 15; Sergei Grigorievich Kushnarenko, posełok Pesochin, ulitsa kooperativnaya, 7, and Vladimir Semenovich Lepetjukha, 607 mikroraion, 52, kv. 8, all of Kharkov, U.S.S.R.

Filed Feb. 23, 1972, Ser. No. 228,714

Int. Cl. B21j *7/28*

U.S. Cl. 72—407 **3 Claims**



A metal forming machine is disclosed having a working tool mounted on the head of a ram located within a receiver and performing a working stroke under the action of the compressed gas filling the receiver. In order to return the working tool to its initial position, the ram is connected through a rod with a crank gear. The rod through its one end is hinged to the crank arm and through its other end is connected to a piston which is located in the space provided within the ram. The stroke of the piston is somewhat greater than the stroke of the ram.

3,783,673

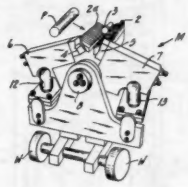
MACHINE FOR FORMING METAL STOCK FOR HOT FORGING

Arne O. Andresen, Racine, Wis., assignor to Walker Forge, Inc., Racine, Wis.

Division of Ser. No. 148,092, May 28, 1972, Pat. No. 3,713,320. This application Sept. 7, 1972, Ser. No. 286,866

Int. Cl. B21j *9/12*

U.S. Cl. 72—407 **4 Claims**



A machine for deforming the end of a piece of metal for handling it for insertion into a forging press or the like to form the finished article. The machine receives, holds and deforms a piece of metal which has been heated to a plastic condition, and has stop means for holding the piece against axial shifting in one direction while its squeezing jaws deform the end of the piece into a holding portion. The swingable jaws of the machine are of a shape (1) that precludes axial shifting of the piece in the other direction and (2) that forms the holding portion into a flattened and axially elongated shape having tool engaging projections.

3,783,674

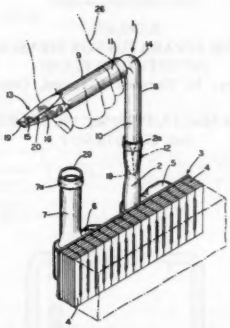
TUBE EXPANSION TOOL

Ralph Hinerman, 120 Seventh St., N.E., North Canton, Ohio

Filed Sept. 20, 1971, Ser. No. 181,854

Int. Cl. B21c *3/16*

U.S. Cl. 72—476 **3 Claims**



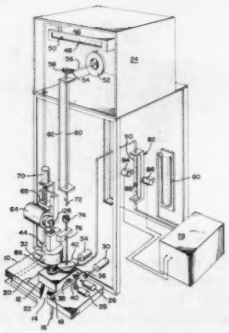
A hand tool for expanding thin-wall metal tubes such as the inlet and outlet tubes of vehicle heater radiators. A pair of cylindrical shank members are joined together at a generally right angle. The free ends of the shank members are formed with a plurality of tapered flat surfaces terminating in an elongated tip. The surfaces form sharp corners at their junctions extending along the tapered ends, which corners expand a damaged tube when either of the tapered ends is rotated and moved downwardly within a tube having a diameter equal to the inserted shank diameter. The other shank member functions as a handle for rotating the inserted shank member within a tube being expanded.

3,783,675

AUTOMATIC WATER HEATER CONTROL TEMPERATURE CALIBRATION MEANS

Emmett E. Kreps, Lynwood, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 4, 1971, Ser. No. 185,975
Int. Cl. G01k *15/00*
U.S. Cl. 73—1 F **13 Claims**



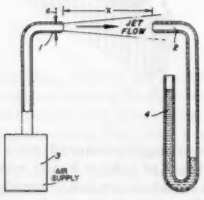
An assembly is disclosed for automatically calibrating water heater controls and like controls having a clutch spring disposed in friction engagement about a temperature control shaft and adopted to carry a suitable adjusting knob. The calibraion assembly includes a temperature-to-motion transducer and a calibration lockup head which cooperate to sense ambient temperature, seize the clutch spring and position the same to a dial position corresponding to the sensed ambient temperature. A motor is also included and is driven by a flow sensing control device to rotate the control shaft for opening and closing the water heater control valve several times before the clutch spring is set at the proper control point.

3,783,676

METHOD AND APPARATUS FOR MEASURING THE DENSITY OF A FLUID

John W. Tanney, 34 Harwick Crescent, Ottawa, Ontario, Canada

Filed Mar. 13, 1973, Ser. No. 340,929
Int. Cl. G01n *9/32*
U.S. Cl. 73—32 **8 Claims**



A fluid densitometer and its method of use, comprising directing a fluid jet into a fluid whose density is to be measured and towards an open end of a tube. The nozzle and tube have a turbulent jet forming space extending between them a distance of less than fifty times the maximum distance across the nozzle orifice, and the fluid pressure in the tube is measured to determine the density of the fluid into which the jet is directed. The geometry of the fluid jet is derived from

$$R = (V h \rho)/\mu$$

R is the Reynolds number and is in excess of 1700,
V is the velocity of the fluid delivered to the device,
ρ is the density of the fluid delivered to the device,
μ is the viscosity of the fluid delivered to the device, and
h is the hydraulic radius obtained from,

$$h = (4A)/(P_1), \text{ where}$$

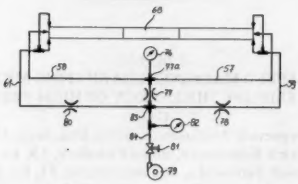
A is the area of the fluid jet orifice, and
P_1 is the distance around the perimeter of the fluid jet orifice.

3,783,677

METHOD AND APPARATUS FOR TESTING CIGARETTES OR LIKE ROD-SHAPED ARTICLES

Uwe Heitmann, Hamburg, and Hans Jochen Grasse, Wentorf, both of Germany, assignors to Hauni-Werke Korber & Cie KG, Hamburg, Germany

Filed Apr. 26, 1972, Ser. No. 247,714
Claims priority, application Germany, Apr. 30, 1971, P 21 21 366.1
Int. Cl. G01m *3/26*
U.S. Cl. 73—41 **17 Claims**



Cigarettes or analogous rod-shaped articles are tested on a conveyor having flutes wherein the cigarettes move sideways between pairs of sealing elements each having an apertured sealing face and an annular nozzle. At least one sealing element of each pair is movable toward the other sealing element so that their sealing faces engage portions of or entire end surfaces of wrappers on cigarettes in the respective flutes. A testing fluid is thereupon passed through the cigarettes, either by admitting such fluid at both ends of cigarettes or by admitting the fluid at one end and allowing it to issue from the other end of each cigarette. During testing, the nozzles discharge annular streams of compressed air which impinge upon the external surfaces of wrappers in immediate or close proximity of their end surfaces to prevent uncontrolled escape of testing fluid in the event that the end surfaces of the wrappers are not located in planes which are exactly normal to the axes of the respective cigarettes. The sealing air can be discharged at right angles to the axes of the cigarettes or in directions having a first component normal to and a second component parallel with the axis of the respective cigarette.

3,783,678

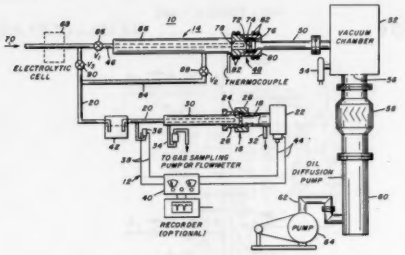
VACUUM GAUGE CALIBRATOR

Khandelwal B. Das, Seattle, and William E. Strobelt, Auburn, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 13, 1971, Ser. No. 188,903
Int. Cl. G01l *27/02*
U.S. Cl. 73—4 V **4 Claims**

A vacuum gauge calibrator characterized by a vacuum chamber having an outlet for an ionization gauge to be calibrated in combination with a vacuum chamber and as-

sociated vacuum pump, which pump includes a liquid nitrogen trap to liquefy any foreign gas heavier than nitrogen, a hydrogen analyzer, a heated palladium disc permeable to hydrogen and an electrolysis cell for generating a precisely



known amount of hydrogen, whereby hydrogen generated by the cell is caused to seep through the disc and to be collected in the vacuum chamber where the ionization gauge is then calibrated.

3,783,679

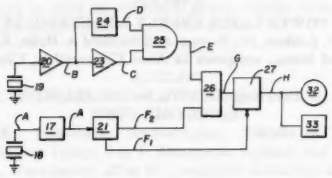
TIME BASE MEASUREMENT CIRCUIT

Jerry L. Jackson, San Antonio, Tex., assignor to Walter A. Gunkel, San Antonio, Tex.

Filed Feb. 22, 1971, Ser. No. 117,663

Int. Cl. G01n *29/04*

U.S. Cl. 73—67.7 **1 Claim**



A time base measurement circuit is disclosed which responds to the lapsed time between two electrical signals to provide an electrical voltage proportional to this lapsed time by detecting a phase condition of the second of the electrical signals. The circuit is particularly useful in an ultrasonic inspection system which determines the relative thickness of an object being ultrasonically inspected.

3,783,680

MULTIPOINT VIBRATION MONITORING SYSTEM

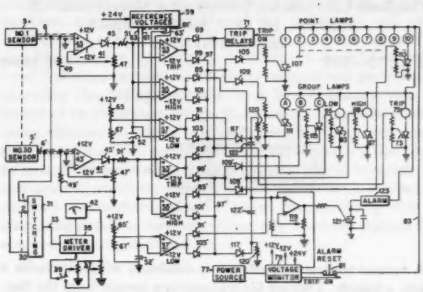
Charles H. Mason, Paducah, Ky., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed July 12, 1972, Ser. No. 270,883

Int. Cl. G01h *1/08*

U.S. Cl. 73—71.2 **10 Claims**

A multipoint vibration monitor has been provided for monitoring vibration emanating from rotating equipment. A plurality of seismic-type detectors are placed at various vulnerable points on the equipment. These detectors are electromechanical generators whose output signals are proportional to both frequency and magnitude of vibration in a single plane, thereby reducing errors introduced by extraneous vibrations of a transient nature which would give false indications. A unique multichannel electronic circuit is provided



into which the detector signals are fed to remotely monitor the plurality of detectors and provide both an alarm and point location of abnormal vibrations.

3,783,681

METHOD AND APPARATUS TO MONITOR QUALITY OF OPERATION OF A PISTON IN A CYLINDER

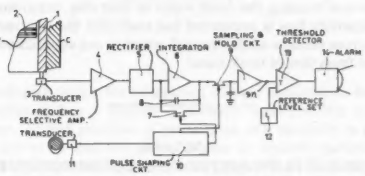
Dieter Hirt, Augsburg; Leonhard Gerlich, Hirblingen, and Eugen Heinle, Neusass, all of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Augsburg, Germany

Filed Jan. 16, 1973, Ser. No. 324,111

Claims priority, application Germany, Jan. 22, 1972, P 22 03 047.3

Int. Cl. G01m *15/00*

U.S. Cl. 73—119 R **21 Claims**



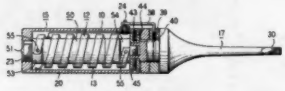
A transducer is connected to the cylinder sleeve or liner, and deflection, preferably axial vibration or oscillation of the liner is converted into an electrical signal, which is integrated, and detected with respect to a reference level; if a vibration frequency, particularly in the ultrasonic range is detected, or if vibration amplitudes exceed a certain level, an alarm signal is provided. The reference level may be a dynamic level, in which output signals from all cylinders of a multi-cylinder engine are combined, and the combined signal is utilized as a dynamic reference for comparison with any individual cylinder signal. Additional operating parameters can be considered in a logic circuit, for example fuel supply, or extent of loading on the engine, with feedback to reduce fuel supply, or shut off the engine upon detection of excessive vibration in any one or more cylinders.

3,783,682

TORQUE TESTING SCREWDRIVER WITH AUTOMATIC TORQUE INDICATING MEANS

Dominic Timothy Lipari, Columbus, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.Y.

Filed Dec. 16, 1971, Ser. No. 208,683
Int. Cl. G01l 5/24
U.S. Cl. 73—139 10 Claims



A torque-testing screwdriver is disclosed which includes a blade, a handle, a spring for transmitting torque from the handle to the blade, a scale for indicating the amount of torque transmitted from the handle to the blade, and an indicating contact which continuously enables a signal device during the torque test and which automatically positions itself opposite the scale reading representing the maximum resistive torque exerted by the screw under test.

3,783,683

MINIMIZING CLAY DAMAGE IN A LOG-INJECT-LOG PROCEDURE

Robert P. Murphy, and Frank O. Jones, Jr., both of Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

Filed Dec. 27, 1971, Ser. No. 212,783
Int. Cl. E21b 49/00
U.S. Cl. 73—152 3 Claims

This invention relates to determining the oil saturation in an underground rock reservoir penetrated by a well such as by use of a log-inject-log technique. In some such techniques thermal neutron decay time logs are taken in the native state and then after fresh water injection. These logs are used in an equation to find oil saturation. This invention is directed to a method of treating the fresh water so that clay impairment or permeability loss is prevented but such that the neutron capture cross section of the treated water is not significantly different from that of fresh water.

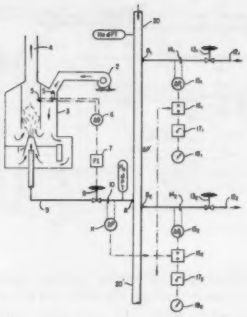
3,783,684

FUEL GAS FLOW-METER CORRECTOR EQUIPMENT FOR GASES HAVING VARIABLE CHARACTERISTICS

Guy Baudelet De Livois, Paris, France, assignor to Controle Bailey (Societe Anonyme), Clamart, France

Filed Mar. 20, 1972, Ser. No. 236,255
Claims priority, application France, Apr. 2, 1971, 71.11674
Int. Cl. G01e 17/00
U.S. Cl. 73—190 1 Claim

Corrector equipment for converting gas flow rate measurements into heat flow measurements in a fuel gas distribution network using gas or gas mixture having variable characteristics and including a plurality of user stations branched on the general piping of said network, each of said stations including a gas admission valve, a diaphragm inserted upflow of said valve and a differential pressure gauge connected with said diaphragm. The equipment comprises a calorimetric oven gas-supplied from said network through a pipe, a regulator valve inserted on said pipe and controlled by a regulator system so as to keep the heat flow in said oven at a constant value, a further diaphragm inserted on said pipe and a further differential pressure gauge connected with said further diaphragm, said further pressure gauge delivering a signal $\Delta P'$, means for keeping the temperature and pressure of the gas supplied at any instant to all of said diaphragms at common constant values, and calculation means for deriving from said signal and from the flow rates ΔP_1, ΔP_2, . . . measured by said differential pressure gauges in each one of said stations quantities proportional to $\sqrt{\Delta P_1/\Delta P'}$, $\sqrt{\Delta P_2/\Delta P'}$, . . . and representing the actual heat flow rates in each one of said stations.

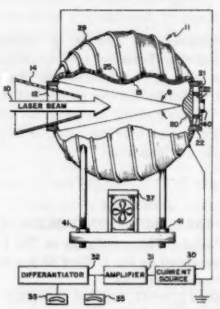


3,783,685

HIGH POWER LASER ENERGY MEASURING DEVICE

Glenn W. Zeiders, Jr., Boston, and Richard A. Hella, Andover, both of Mass., assignors to Avco Corporation, Cincinnati, Ohio

Filed Aug. 23, 1972, Ser. No. 282,901
Int. Cl. G01h 17/00
U.S. Cl. 73—190 R 6 Claims



Apparatus for measuring high power laser output by calorimetric means, wherein the laser beam whose energy is to be measured is directed within a hollow container. The beam within the container is redirected to evenly illuminate the interior surface of said container. The temperature rise of the container is measured and the effective energy of the incident beam is thereby determined calorimetrically.

3,783,686

MAGNETIC FLOWMETER ARRANGEMENT

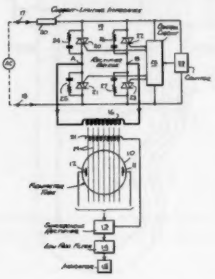
Rainer Hentschel, Hanover, Germany, assignor to Fischer & Porter Company, Warminster, Pa.

Filed Nov. 5, 1971, Ser. No. 196,011

Claims priority, application Germany, Nov. 6, 1970, P 20 54 624.1

Int. Cl. G01f 1/04

U.S. Cl. 73—194 EM 9 Claims



A magnetic flowmeter in which a pair of metering electrodes is disposed at diametrically opposed points in a flow tube through which flows the fluid to be measured, a magnetic field being established at right angles to the direction of flow by an excitation winding. The winding is energized by a cyclical voltage derived from an a-c power line, the polarity of the cyclical voltage being reversed at a rate which is a sub-multiple of the line frequency whereby each interval between successive points of reversal contains the same number of full cycles and the polarity of the last half cycle in each interval is the same as the first half cycle in the succeeding interval. The arrangement is such as to cancel error voltage components resulting from line frequency disturbances.

3,783,687

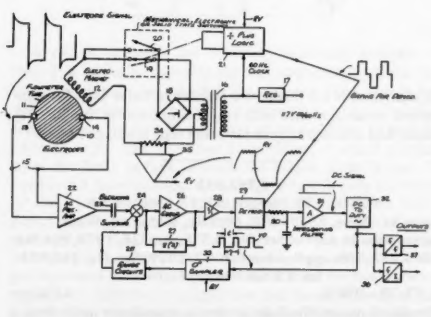
ELECTROMAGNETIC FLOWMETER WITH SQUARE-WAVE EXCITATION

Elmer D. Mannherz, Southampton; Hubert A. Riester, Huntington Valley; Roy F. Schmoock, Ivyland, and John S. Yard, Warminster, all of Pa., assignors to Fischer & Porter Company, Warminster, Pa.

Filed May 26, 1972, Ser. No. 257,378

Int. Cl. G01f 1/00; G01p 5/08

U.S. Cl. 73—194 EM 7 Claims



An electromagnetic flowmeter system wherein liquid to be measured is conducted through a flow tube to intersect a transverse magnetic field produced by an electromagnet, the voltage induced in the fluid being transferred to a pair of electrodes mounted at diametrically opposed points on the tube. To avoid spurious voltages arising from stray couplings between the electromagnetic and the loop constituted by the electrodes and the liquid extending therebetween, without, however, causing polarization of the electrodes, the electromagnet is energized by a low-frequency square wave. This wave is produced by applying the output voltage of an unfiltered full-wave rectifier to the electromagnet and periodically reversing the voltage polarity at a low-frequency rate by means of an electronic switch, filtration of the applied voltage being effected largely by the electromagnet induction. Since the steady state field produced by the square wave is disrupted by switching transients occurring at the points of reversal, the converter to which the signal from the electrodes is applied includes a demodulator which is gated synchronously with an electronic switch to yield an output only when the magnet flux achieves a steady state condition.

3,783,688

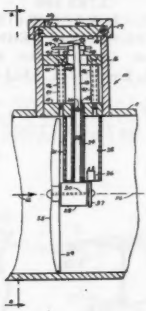
FLOW METERING DEVICE

Berthold A. Knauth, Daytona Beach, Fla., assignor to Rotron Incorporated, Woodstock, N.Y.

Filed Aug. 14, 1972, Ser. No. 280,333

Int. Cl. G01f 1/06

U.S. Cl. 73—194 R 15 Claims



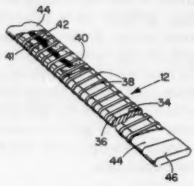
A metering device for measuring volume flow rate or density conditions has a linearly moveable fluid reactive screw member. At one position of movement, the assembly is positively driven so that the screw carries to another position at which the drive means is rendered inoperative. As such, the screw assembly seeks a null position at which forces operating on the assembly are balanced, the sensed revolutions of the assembly being equatable to the volume flow or density condition depending upon the mode of operation of the device. Buoyancy and gravitational force components acting along the line of movement are equalized when the device is used in the fluid flow mode of operation while a force biasing the screw assembly into the drive position is needed when density conditions are being sensed. Gravitational and magnetic biasing is illustrated although other means may be used. One embodiment uses a pivotal mounting arrangement for the screw assembly and the drive motor is energized and de-energized in response to the sensed position of the pivot arm. In another embodiment, a clutching arrangement is used and wherein one clutch plate is driven and the other clutch plate is fixed to the screw assembly. The screw under such circumstances seeks a null position at which clutch plate slippage occurs and the forces acting on the line of movement of the assembly are equalized.

3,783,689

DISCRETE LEVEL DETECTOR

Albert D. Ehrenfried, and Norton T. Pierce, both of Concord, Mass., assignors to Metritape, Inc., West Concord, Mass.

Filed Mar. 24, 1970, Ser. No. 22,204
Int. Cl. G01f 23/18
U.S. Cl. 73—301 9 Claims



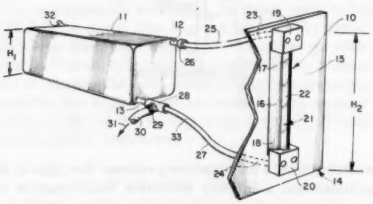
A level indicator for indicating the presence or absence of a fluent material at a discrete position. An elongated sensing element is provided which is operative in the presence of surrounding pressure to actuate one or more redundant contacts integrally formed therewith and which is isolated from the working environment.

3,783,690

LEVEL INDICATOR FOR WATER TANK OF RECREATIONAL VEHICLE

James Earl Bridegum, 12143 Gothic Ave., Granada Hills, Calif., and Rudy A. Laczkovich, 1343 Carmelena St., West Los Angeles, Calif.

Filed Feb. 11, 1972, Ser. No. 225,482
Int. Cl. G01f 23/02
U.S. Cl. 73—328 11 Claims



A flow tube arranged in fluid communication with a remotely located water storage tank is coupled to a convenient fixture inside a recreational vehicle.

A transparent part of the tube is stably held against the fixture by a retaining means. In order to indicate the water level of the tank, a floatation marker is located within the tube for viewing by a person.

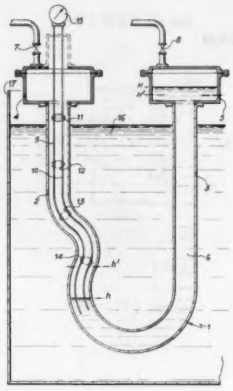
3,783,691

THERMOCOUPLE PROBE FOR TEMPERATURE MEASUREMENT

Jean-Claude Arlaud, Aix-en-Provence, France, assignor to Commissariat A L'Energy Atomique, Paris, France

Filed Jan. 29, 1973, Ser. No. 327,727
Claims priority, application France, Feb. 1, 1972, 7203250
Int. Cl. G01k 3/06, 7/08
U.S. Cl. 73—341 3 Claims

A thermocouple probe for the indication of temperature over a wide range of values has a hot junction which can readily be displaced. The thermocouple comprises a tube which is suspended from a stationary pressure chamber but electrically insulated therefrom and which contains in the lower portion thereof a liquid having good electrical conductivity and supplied from a reservoir, two electrically conductive wires



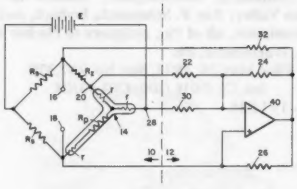
formed of different metals and connected at the upper ends thereof to a voltmeter whilst the lower ends are immersed in said liquid, and pneumatic means for displacing the level of the free surface of the liquid within the tube, said tube being formed of material which is compatible with the liquid.

3,783,692

RESISTANCE BULB COMPENSATION CIRCUITS

Peter D. Hansen, Wellesley Hills, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed Apr. 6, 1972, Ser. No. 241,547
Int. Cl. G01k 7/20
U.S. Cl. 73—362 AR 9 Claims



Bridge circuits for three wire resistance bulbs used for temperature measurements including compensation for line resistance and non-linearity of platinum type resistance bulbs.

3,783,693

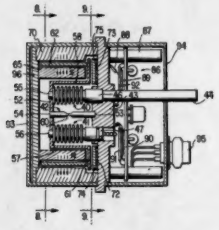
ABSOLUTE PRESSURE TRANSDUCER

Jerome M. Paros, 15109 N.E. 68th St., Redmond, Wash.

Continuation-in-part of Ser. No. 4,576, Jan. 21, 1970, Pat. No. 3,664,237. This application Feb. 17, 1971, Ser. No. 115,954
Int. Cl. G01l 9/12, 19/04
U.S. Cl. 73—398 C 4 Claims

Disclosed is an absolute pressure transducer including a mechanical assembly comprising an open bellows, a suspension system, and a sealed bellows arranged to yield a torque about a single sensitive axis when pressure is applied to the

open bellows and an electronic circuit comprising a detector for sensing angular motion and a torquing device to restore the mechanical assembly toward its null position. The amount



of electrically generated torque necessary to balance the pressure induced torque is proportional to, and a measure of, the applied pressure.

3,783,694

PUNCH FOR PIERCING SAMPLE CAPSULES

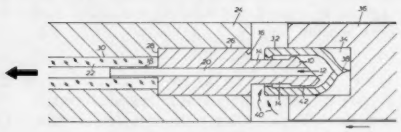
Eginhart Otte, and Dietrich Jentzsch, both of Uberlingen/Bodensee, Germany, assignors to Bodenseewerk Perkin-Elmer & Co., GmbH,, Uberlingen/Bodensee, Germany

Filed Mar. 3, 1972, Ser. No. 231,618

Claims priority, application Germany, Mar. 18, 1971, P 21 12 991.9

Int. Cl. G01n *1/22*

U.S. Cl. 73—422 GC **5 Claims**



A punch assembly for releasing individual samples contained in metallic capsules into an analytical instrument includes a punch for piercing the capsule. The punch has a generally cylindrical piercing front end having a chamfered front surface formed by a plane cutting the front surface at an oblique angle and a central longitudinal channel extending from the front surface through the length of the punch. The cylindrical front end has a diameter which is only moderately smaller than the interior diameter of the capsule, so that the punch acts at least in part as a piston to push the sample material into the longitudinal channel which is connected to the analytical instrument. A relatively rapid flow of transfer gas is caused to flow around the surface of the punch into the capsule to both avoid sample loss and to carry the rest of the sample into the longitudinal channel. The punch assembly thus tends to inject all of the sample into the analytical instrument (e.g., a gas chromatograph) rapidly as a discrete relatively compact "packet" or "slug" of sample material.

3,783,695

FLUID SAMPLING APPARATUS

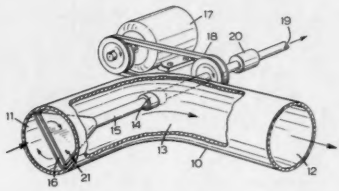
John Grothe, Lakefield, Ontario, and Brian Frank Osborne, Peterborough, Ontario, both of Canada, assignors to Milltronics Limited, The Kingsway Peterborough, Ontario, Canada

Filed Apr. 12, 1972, Ser. No. 243,298

Claims priority, application Great Britain, Apr. 13, 1971, 9,233/71

Int. Cl. G01n *1/10*

U.S. Cl. 73—422 **9 Claims**



A fluid sampling apparatus comprises a tubular duct of circular or elliptical cross-section, a sampling tube extending into the duct and terminating in an outlet opening, and means for rotating the sampling tube about a rotary axis to cause the inlet opening to sweep a circular area bounded by the internal surface of the tube.

3,783,696

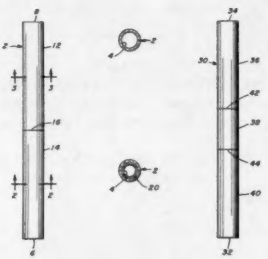
AUTOMATIC VOLUME CONTROL PIPET

Charles M. Coleman, 958 Washington Rd., Pittsburgh, Pa.

Filed Dec. 9, 1971, Ser. No. 206,442

Int. Cl. B01l *3/02*; **G01f** *23/02, 19/00*

U.S. Cl. 73—425.4 P **3 Claims**



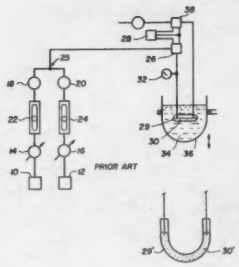
An automatic filling capillary pipet having a tubular body defining an elongated bore having a fluid entry end. The interior surface of the tubular body having a first zone with hydrophobic means for resisting wetting by aqueous liquids. The tubular body interior surface having a second zone which is hydrophilic with respect to aqueous fluids. Introduction of an aqueous fluid into the elongated bore will effect retention therein of a predetermined volume of aqueous fluid proportional to the cross section of the bore and the length of the second zone. In one embodiment the hydrophobic first zone originates at a position spaced from the fluid entry end and the hydrophilic second zone is disposed between the first zone and the fluid entry end. In another embodiment a hydrophobic third zone is disposed intermediate the hydrophilic second zone and the fluid entry end.

3,783,697

METHOD OF DETERMINING SMALL SURFACE AREAS

Seymour Lowell, 42 Wood Hollow Rd., Albertson, N.Y., and Stewart Karp, 67 Hickory Ln., Roslyn Heights, N.Y.

Filed June 20, 1972, Ser. No. 264,461
Int. Cl. G01n *15/08*
U.S. Cl. 73—432 PS 2 Claims



As an improvement over the method of U.S. Pat. No. 3,555,912 which uses flowing mixtures of adsorbate and inert diluent gases to develop surface measurement data, the within improved method further advances this technique by utilizing a cell, which contains the powder sample being measured, of an appropriate design to overcome errors which are found when low surface areas are measured. One optimum consequence using the improved cell hereof is that the measuring gaseous mixture is forced through the mass of the powder sample, thus controllably confining the surface area thereof being measured to the surface bounding the internal voids of the powder sample.

ERRATUM

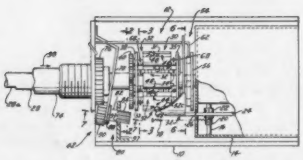
For Class 74—5 see:
Patent No. 3,784,363

3,783,698

PRESET DEVICE FOR UHF TUNER

Shoji Ogasawara; Teruzo Tamate, and Toshimitsu Sonobe, all of Tokyo, Japan, assignors to Alps Electric Co. Ltd., Tokyo, Japan

Filed Jan. 18, 1972, Ser. No. 218,747
Int. Cl. H03j *1/14;* F16h *35/18*
U.S. Cl. 74—10.2 5 Claims



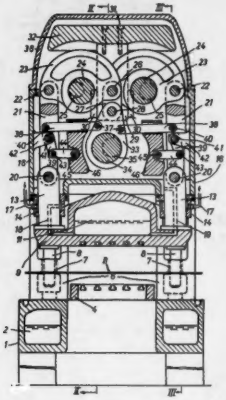
A preset device for a tuner comprises a plurality of externally threaded tuning screws rotatably mounted in grooves on the periphery of a channel selector drum. Each screw is provided with a nut threadedly mounted thereon and movable within the drum grooves axially therealong in response to rotation of the screw.

3,783,699

APPARATUS FOR BALANCING MASSES AT A PUNCH PRESS

August Thomas Portmann, Arbon, Switzerland, assignor to Bruderer AG., Arbon, Switzerland

Filed Sept. 26, 1972, Ser. No. 292,378
Claims priority, application Switzerland, Oct. 1, 1971, 14367/71
Int. Cl. F16h *21/32*
U.S. Cl. 74—40 3 Claims



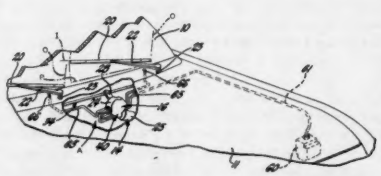
An apparatus for balancing the masses at a transverse shaft-double connecting rod-punch press for follow dies or the like wherein the press ram is driven through the agency of two pressure columns, guides and double levers from a crank defined by the double connecting rods arranged at the transverse shaft. For balancing the vertically moved masses and the vertical components of the eccentrically rotating masses, the crosshead driven by the crank and guided in vertical direction carries a balance weight. For balancing the horizontal components of the eccentrically rotating masses there are provided further balance weights connected with the crank through the agency of double levers and guides mounted at the press housing.

3,783,700

WINDSHIELD WASHER PUMP ASSEMBLY

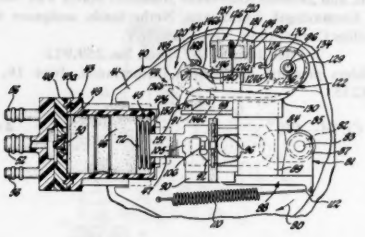
Lloyd L. Kuck, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 29, 1972, Ser. No. 310,578
Int. Cl. F16h *25/08*
U.S. Cl. 74—55 3 Claims



In a preferred form, this disclosure relates to a washer pump assembly for a windshield cleaning apparatus for an automo-

tive vehicle. The washer pump assembly includes a reciprocable pump having a spring actuated delivery stroke and an interruptible driving connection with a drive means. The washer pump assembly further includes a control and timer mechanism which is selectively operable, when energized, to



provide either a demand wash cycle during which the pump operates as long as the operator desires or a programmed wash cycle during which the pump is drivingly connected with the drive means for a predetermined time interval and then automatically disconnected therefrom.

3,783,701

VIBRATOR

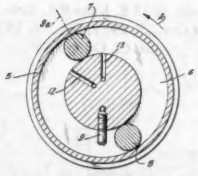
Werner Steprath, Gohr, and Manfred Birkholz, Schoenkirchen, both of Germany, assignors to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft, Grevenbroich, Germany

Filed Aug. 9, 1972, Ser. No. 279,170

Claims priority, application Germany, Aug. 10, 1971, P 21 40 006.6

Int. Cl. F16h *33/10*

U.S. Cl. 74—87 **18 Claims**



In an apparatus for producing vibrations, there is provided a combination consisting of a housing having an annular channel and at least one mass accomodated in and movable circumferentially of the channel. The combination further includes an arrangement for effecting movement of the mass circumferentially of the channel to respective locations therein. Abutments are provided in the channel for impeding movement of the mass through distances in excess of a predetermined portion of arc.

3,783,702

ELECTRIC WINDOW OPERATING MECHANISM

Bernhard Dehler, Coburg, Germany, assignor to Metallwerk Max Brose & Co., Coburg, Germany

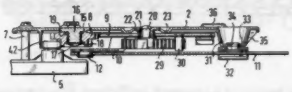
Filed June 7, 1972, Ser. No. 260,628

Claims priority, application Germany, June 28, 1971, P 21 32 067.2

Int. Cl. F16h *27/02*

U.S. Cl. 74—89 **9 Claims**

The operating mechanism for a window includes an electric motor fastened to a mounting plate which is a unitary zinc diecasting formed with bearings, backing surfaces, and retaining claws for the movable elements of the mechanism including a gear wheel driven by the motor and a circumferentially toothed segment meshing with the gear wheel. A guide sleeve pivoted on the plate slidably receives the window operating



lever, one end of which is hingedly connected to a radial crank arm on the segment. Angular movement of the segment is limited by an abutment on the plate, and a spiral spring biases the segment away from the position of abutment in a direction to assist lifting of the window and to brake its descent.

3,783,703

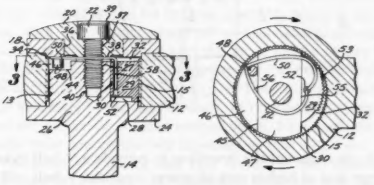
RATCHET MECHANISM

Lester B. Trimble, Downey, and Zygmunt J. Sopinski, Pico Rivera, both of Calif., assignors to Jo-Line Tools, Inc., Anaheim, Calif.

Filed Nov. 17, 1972, Ser. No. 307,428

Int. Cl. F16h *27/02*

U.S. Cl. 74—157 **11 Claims**



A ratchet tool is described which has a ring for reversal of the ratcheting mechanism. The ratcheting tool comprises a work-receiving member that fits into a cylindrical recess of a ratchet tool housing and which has a segmentally relieved, inner, flat surface to define a segmental recess with a chordal shoulder. A segemental pawl is disposed within the recess and is biased to either side of the segmental recess by resilient means that is biased between the pawl and abutment means, the latter being eccentrically carried on the inside surface of the ring means. In its preferred embodiment, the ratcheting tool has a cap that serves as a force plate and is in force transmitting relationship to the work-receiving means whereby an axial force or pressure can be applied to the tool. Another preferred embodiment employs a circular flange on the work-receiving member to provide a peripheral gripping surface whereby the work-receiving member may be rotated with finger pressure.

3,783,704

POWER TRANSMISSION, CONVEYOR AND VEHICLE TRACK

Neil Lawson, Glamorgan, Wales, assignor to Dunlop Limited, London, England

Filed Mar. 8, 1972, Ser. No. 232,854

Claims priority, application Great Britain, Mar. 11, 1971, 06,637/71

Int. Cl. F16g *1/00*

U.S. Cl. 74—231 J **16 Claims**

A belt having a joint with abutting ends both above and below the neutral axis of longitudinal bending of the belt, and

a flexible jointing ply located between the abutting ends and lying along the neutral axis to reinforce the joint, the flexible

jointing ply being of a strength sufficient to withstand substantially the same tensile load as that which the uncut belt is capable of withstanding.

3,783,705

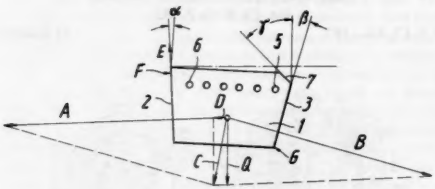
V-BELT FOR A STEPLESS VARIABLE ASYMMETRIC V-BELT DRIVING GEAR

Friedrich Moogk, Sinn, Germany, assignor to Emil and Adolf Becker KG, Sinn, Germany

Filed June 14, 1972, Ser. No. 262,442

Int. Cl. F16g *5/00*

U.S. Cl. 74—234 **5 Claims**



It is the object of the invention to provide a V-belt in such a manner that at higher rate of power input the V-belt will have longer life-time.

It was found that this object is met if the flank of the V-belt associated with the almost vertical side flank is inclined by at least 1° more than this side flank; and if the flank of the V-belt associated with the inclined side flank is inclined by at least 1° less than this side flank.

3,783,706

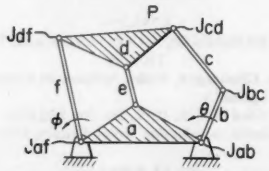
SIX-BAR LINKAGE HAVING SYMMETRICAL DISPLACEMENT CURVE

Kiyoshi Ogawa; Yoshiaki Yokoyama, and Yoshio Fukushima, all of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Continuation-in-part of Ser. No. 23,073, March 26, 1970, abandoned. This application Mar. 10, 1972, Ser. No. 233,455

Int. Cl. G05g *1/04*

U.S. Cl. 74—469 **5 Claims**



A six-bar linkage which has an angular displacement curve between θ_1 and ϕ where θ is the angle of rotation of a driving link and ϕ is the angle of rotation of a driven link for producing a rectilinear motion of one point of the six-bar linkage without guide means when the driving link rotates.

3,783,707

CROSSTABLE FOR POSITIONING ARTICLES

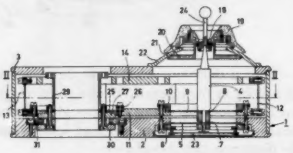
Antonius Franciscus Foederer; Andrianus Jacobus Jozef Franken, and Jacobus Andrianus Johannes Maria Van Noord, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 5, 1972, Ser. No. 259,912

Claims priority, application Netherlands, June 16, 1971, 7108235

Int. Cl. G05g *1/00*

U.S. Cl. 74—470 **4 Claims**



A crosstable for positioning articles, comprising a frame and a table which is movable relative thereto. An adjusting lever is connected by a diaphragm to the frame and to the table. The table is connected by a first pair of leaf springs, to an intermediate member which in turn is connected, by a second pair of leaf springs to the frame. The direction of support of the first pair of leaf springs being transverse to that of the second pair.

3,783,708

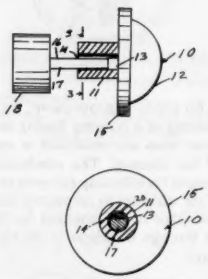
KNOB FOR ELECTRONIC CONTROL SHAFT

Henry J. Witkowski, 5625 E. Lake Rd., Erie, Pa.

Filed Oct. 27, 1971, Ser. No. 192,909

Int. Cl. G05g *1/10*

U.S. Cl. 74—553 **3 Claims**



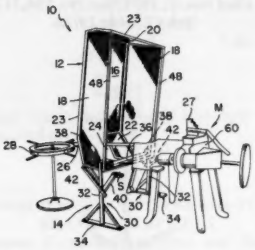
This specification discloses a handle knob or button for a shaft such as the shaft of electronic components; for example, volume controls for use in radio and television sets, potentiometers and the like. The conventional handle or knob of this type is molded of a plastic material and has an inserted metallic spring to engage the flat side of a shaft or a slot in the shaft. The knob disclosed herein has an integral web molded into it. The web is curved from the sides of the opening toward the diammetrical center of the opening in the handle and, therefore, provides in effect a resilient member or spring.

3,783,709

MACHINE GUARD

Robert E. Scott, 1471 Club Dr., Bloomfield Hills, Mich.

Filed May 26, 1972, Ser. No. 257,084
Int. Cl. F16p 3/08
U.S. Cl. 74—612 6 Claims



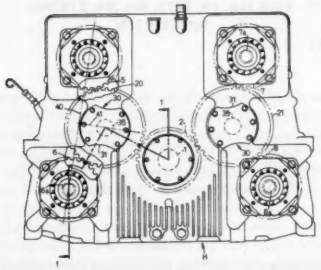
A machine guard for protecting the machine operator and others comprising a cage-like hood adapted to at least partially cover the machine when in use and capable of being swung away from the machine to a retracted position. Means are provided to cut off power to the machine immediately upon initial retraction of the hood.

3,783,710

POWER TRANSMITTING DRIVE APPARATUS

Horst G. Steinhagen, Racine, Wis., assignor to Twin Disc, Incorporated, Racine, Wis.

Filed Nov. 16, 1972, Ser. No. 307,103
Int. Cl. F16h 37/06, 3/08, 57/02
U.S. Cl. 74—665 GA 3 Claims



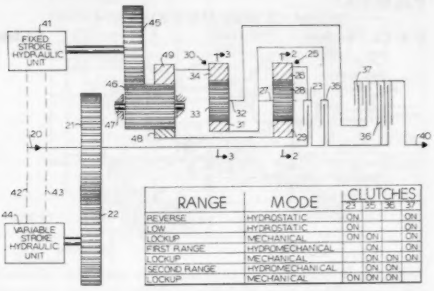
A power transmitting drive apparatus for distributing power from a single power source to a plurality of outputs for driving various mechanism, such as fluid pumps. A fixedly located power input means is rotatably mounted in the housing and furnishes power to two intermediate gear means, the intermediate gear means then each transmitting the power to two output gear means which are attached to the load, such as fluid pumps or the like. The output gear means is at a fixed location in the housing and need not be changed. The intermediate gear means as well as the input gear means are changeable as to size and number of teeth to effect different gear ratio changes. The arrangement is such that the intermediate gears can be replaced with others of different size, but at the same time, the housing requires no additional mounting holes for mounting the intermediate gears in various positions. Instead, various types of gear support means are provided in fixed locations in the housing so as to be able to shift the center of rotation of the intermediate gears along a certain predetermined line.

3,783,711

PLURAL RANGE TRANSMISSION

Elias Orshansky, Jr., San Francisco, Calif., assignor to Orshansky Transmission Corporation, New York, N.Y.

Filed June 2, 1972, Ser. No. 259,025
Int. Cl. F16h 47/04
U.S. Cl. 74—687 22 Claims



RANGE	MODE	CLUTCHES 23	25	26	27
REVERSE	HYDROSTATIC	ON			ON
LOW	HYDROSTATIC	ON			ON
LOCKUP	MECHANICAL	ON	ON		ON
FIRST RANGE	HYDROMECHANICAL		ON		ON
LOCKUP	MECHANICAL		ON	ON	ON
SECOND RANGE	HYDROMECHANICAL		ON	ON	
LOCKUP	MECHANICAL	ON	ON	ON	

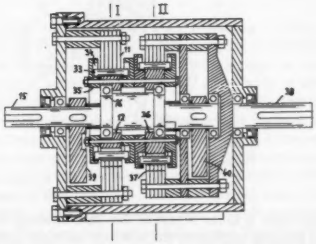
A transmission comprising a plurality of planetary assembiles, each having input means, output means, and reaction means, the output means for the one assembly being in driving relation with the input means of a succeeding assembly. Respective clutches connect (1) the input means of the first assembly to the input shaft, (2) the input means of the first assembly to the output means thereof, (3) the output means of the first assembly to the output shaft, (4) the output means of the second assembly to said output shaft. First and second hydraulic units are connected together so that when one is a pump the other is a motor and vice versa, the first hydraulic unit having a fixed stroke and the second hydraulic unit having a variable stroke and driven by the input shaft, the second hydraulic unit being connected by a gear train to the reaction means of both planetary assemblies, which rotate in opposite directions.

3,783,712

HIGH RATIO FRICTIONLESS SPEED REDUCTOR

Rene D. Colinet, 4902 N. 13th St., Philadelphia, Pa.

Filed Mar. 28, 1972, Ser. No. 238,887
Claims priority, application Belgium, July 30, 1971, 770716
Int. Cl. F16h 1/28
U.S. Cl. 74—805 3 Claims



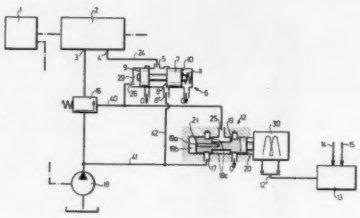
A mechanical rotary speed reductor for high ratio reduction of speed between an input shaft and an output shaft with no in-

termediary shaft. With no friction between the teeth of the gears and a unique design, high torques can be transmitted with great mechanical efficiency.

3,783,713
KICKDOWN ARRANGEMENT FOR A HYDRAULIC TRANSMISSION

Gerhard Will, Beutelsbach, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 4, 1972, Ser. No. 294,889
Claims priority, application Germany, Oct. 9, 1971, P 21 50 468.7
Int. Cl. B60k *21/00;* **F16h** *3/74*
U.S. Cl. 74—865 **5 Claims**

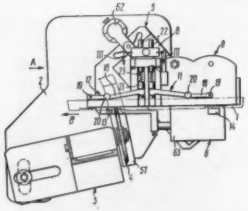


A kickdown arrangement for the hydraulic transmission of a motorcar includes an electrohydraulic transducer with a throttle valve operated by an electromagnet, and a control valve controlled by pressure fluid from the throttle valve, and producing a hydraulic kickdown signal when a predetermined maximum control pressure is reached upon full depression of the gas pedal. Both valves receive fluid under pressure from the outlet of a pump driven by the motor which drives the transmission. A servo main valve connects the outlet of the pump with the hydraulic transmission, and is controlled by a control flow from the outlet of the throttle valve.

3,783,714
BAND SAW GRINDER

Vladimir Viktorovich Idel, ulitsa Gertsena 3, kv. 37, Zavolzhie Gorkovskoi Oblasti, U.S.S.R.

Filed Oct. 24, 1972, Ser. No. 300,414
Claims priority, application U.S.S.R., Oct. 25, 1971, 1706658; Feb. 22, 1971, 1746568
Int. Cl. B23d *63/12*
U.S. Cl. 76—37 **4 Claims**

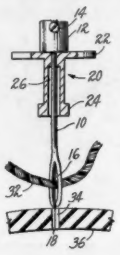


A band saw grinder wherein the saw-holding device comprises a flexible appliance for holding the side surfaces of the saw, a flexible appliance for holding the back surface of the saw, located before the grinding wheel in the direction of saw pitch feed with relation to the grinding wheel, and an additional flexible appliance for holding the back surface of the saw, located after the grinding wheel in the direction of pitch feed. The provision of the additional appliance ensures identical profiles of the saw teeth throughout the length of the saw.

3,783,715
TIRE REPAIR TOOLS

Alec W. Niconchuk, 267 Lowell St., Peabody, Mass.

Filed Nov. 1, 1971, Ser. No. 194,113
Int. Cl. B60c *25/16*
U.S. Cl. 81—15.7 **3 Claims**

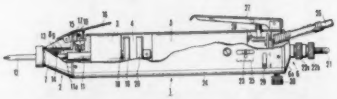


There is disclosed in the specification a tire repair tool for inserting plugging material typically in the form of rubber coated twisted strands, into a tire puncture. The plugging material is threaded into the open eye of a needle forming a part of the tool and inserted into the puncture. The inserting motion is limited by a stop free to rotate on the needle's shank so that the ends of the strand are not drawn into the puncture and the stop also limits the withdrawal of the needle.

3,783,716
TOOL DEVICES OF THE VARIABLE TORQUE TYPE

Susumu Saito, Tokyo, Japan, assignor to Tokyo Ferrite Manufacturing Company, Ltd., Kita-ku, Tokyo, Japan

Filed Jan. 19, 1972, Ser. No. 218,906
Int. Cl. B25b
U.S. Cl. 81—52.4 R **6 Claims**



In a tool device of the type comprising rotary driving means, a working tool and a clutch adapted to couple the working tool with the rotary driving means, the clutch comprises a first magnetized disc driven by the rotary driving means and a second magnetized disc confronting the first magnetized disc and connected to the working tool and wherein means is provided for varying the spacing between the first and second magnetized discs whereby to adjust the torque applied to the working tool.

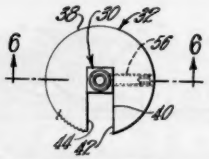
3,783,717
ALIGNMENT AND INSTALLATION TOOL FOR THREADED MALE MEMBERS

Ronald T. Ramge, 2275 N. Cable Rd., Apt. No. 5, Lima, Ohio

Filed May 3, 1972, Ser. No. 250,059
Int. Cl. B25b *13/48*
U.S. Cl. 81—119 **5 Claims**

A support and alignment tool for installing a threaded elbow

into a threaded opening whose axis extends at right angles to the line of sight of the installer, and access to which opening



can only be had from a direction that is at right angles to the axis of the threaded opening.

3,783,718

MACHINE FOR ROUGH-AND/OR FINISH-TURNING OF HEAVY WORKPIECES

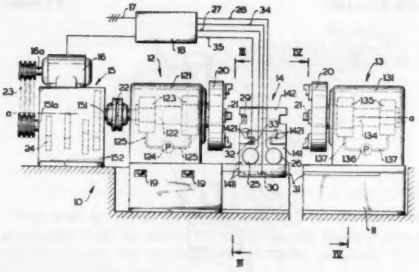
Wolfgang Kuhne, Dortmund-Huckarde, and Hubert Goletz, Bergkamen, both of Germany, assignors to Hoesch Maschinenfabrik Deutschland AG, Dortmund, Germany

Filed Jan. 27, 1972, Ser. No. 221,188

Claims priority, application Germany, Feb. 1, 1972, P 21 04 534.1

Int. Cl. B23b *5/08*

U.S. Cl. 82—2 R **10 Claims**



A heavy-duty machine for rough- and/or finish-turning of heavy workpieces has a bed to which is bolted a headstock and which reciprocably supports a tailstock. The spindles in the headstock and tailstock are rotatable in hydrostatic bearings and the tailstock is provided with hydrostatic ways which are parallel to the common axis of the spindles. The main transmission of the turning machine has a discrete casing mounted behind the headstock and supporting the main motor which rotates the spindle of the headstock by way of the transmission and a coupling for transmitting torsion only which connects the output element of the transmission with the headstock spindle. The output shaft of the main motor is located in a vertical plane which includes the common axis of the two spindles. The outer dimensions of the housing of the headstock match the outer dimensions of the housing of the tailstock. The headstock, the tailstock, the transmission, the main motor and the coupling have halves which are mirror symmetrical with reference to the aforementioned plane.

3,783,719

MACHINE TOOL

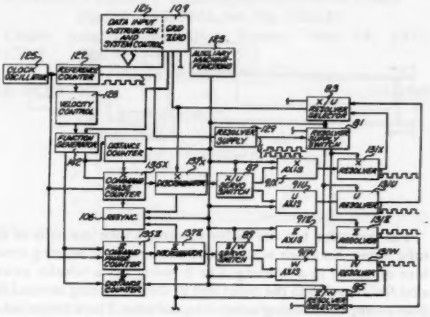
Donald R. Gugliotta, Chagrin Fall, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Aug. 15, 1972, Ser. No. 280,870

Int. Cl. B23b *21/00*

U.S. Cl. 82—21 B **11 Claims**

An improved control apparatus is utilized with a machine tool having side and end turrets. Each of the turrets is moveable along either one of two axes. This control apparatus is operable in response to command signals from a stored program or from manual data inputs to effect movement of either one of the turrets while the other turret remains parked or stationary. The control apparatus includes a single function



generator and two discriminators or position error signal generators, each of which is selectably switched between one position servoloop associated with the side turret and one position servoloop associated with the end turret. Switching may be initiated either by command signals from a stored program or from manual data inputs.

3,783,720

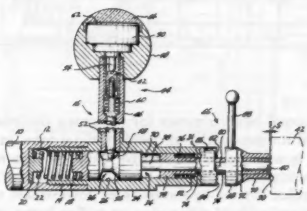
STOP GAUGES WITH HANDLE MOUNTED INDICATOR AND LOCKOUT MEANS

Harrison Martin Dean, 205 N. 31st Ave., Yakima, Wash.

Filed Sept. 2, 1971, Ser. No. 177,249

Int. Cl. B23b *25/06*

U.S. Cl. 82—34 A **11 Claims**

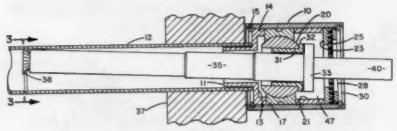


A stop gauge attachment for lathes, milling machines, drill presses and the like, for accurately measuring critical finishing advances of a cutting tool as the tool carriage is tightened against a stop. The device is generally applicable to machines having a tool carriage and drive means for moving the carriage toward a work piece held in the machine, where relative movement between the work piece and tool is terminated by impact of a stop screw or the like on the tool carriage with a stationary stop on the machine, to measure minute amounts of advancement of the tool after the initial impact shuts down the machine drive. Embodiments disclosed include indicators for the bar stop, the ram carriage and the cross feed carriage of a lathe. A dial indicator is included in the knob of the handle used for gripping the device for adjustment purposes. Lockout means are disclosed for rendering the indicator inoperative so as to serve simply as a stop mechanism and provide a reference point from which measurements are made.

3,783,721
ROTARY INTERNAL TUBE CUTTER

Charlie D. Miller, Manlius, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 30, 1972, Ser. No. 257,515
Int. Cl. B23b *3/04;* **B23d** *67/00*
U.S. Cl. 82—82 **4 Claims**

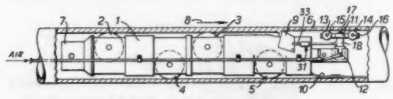


The invention is a device for severing a tube inwardly of the tube sheet. An arbor is journaled in a spherical bearing structure mounted in a housing. The housing has a tubular extension for insertion in the outer end of the tube being severed for positioning the housing relative to the tube. The arbor extends a distance into the tube and a circular cutter is fixed to the inner end of the arbor. The opposite end of the arbor extends from the housing for attachment to a hand manipulated, power-operated driver, such as a portable drill.

3,783,722
INTERNAL BEAD TRIMMERS

Clive James Arthur Bosworth, Kettering, England, assignor to British Steel Corporation, London, England

Filed Aug. 28, 1972, Ser. No. 284,080
Claims priority, application Great Britain, Sept. 21, 1971, 44,019/71
Int. Cl. B26d *3/00*
U.S. Cl. 83—1 **13 Claims**



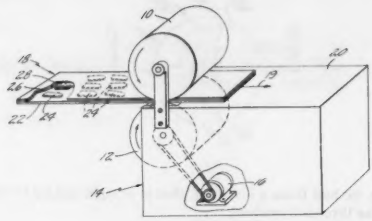
An internal bead trimmer for removing the internal bead formed in the production of welded metal tube, in which the trimmer is mountable for relative axial movement within a tube. The trimmer includes: a bead cutting member; a measuring jet orifice carried by the trimmer downstream of the bead cutting member, said measuring jet orifice being connectable to a source of fluid pressure; and means for enabling the fluid pressure at the outlet of the measuring jet to be sensed; said orifice being so arranged and disposed that in use it follows the path of the cutting member at a predetermined spacing from the internal tube wall and directed at the weld line.

3,783,723
METHOD OF CUTTING THIN, BRITTLE MATERIAL

William H. Van Orden, Enfield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Aug. 23, 1972, Ser. No. 282,996
Int. Cl. B26f *1/44*
U.S. Cl. 83—21 **1 Claim**

A method of cutting shaped pieces from thin brittle material, such as composite fiber reinforced tape, comprises positioning the material to be cut on top of the flat surface of a template, wherein an edge of the template defines the periphery of the flat surface and is the cutting edge of the template, and the flat surface has the shape of the piece to be produced; a compressible material is pressed against the brittle material forcing the brittle material against the flat surface

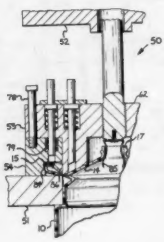


and causing overhanging portions of the brittle material to bend below the plane of the flat surface, whereupon it is cut by the edge of the template.

3,783,724
PLASTIC BOTTLE MANUFACTURE

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois Inc., Toledo, Ohio

Division of Ser. No. 103,660, Jan. 4, 1971. This application Nov. 7, 1972, Ser. No. 304,547
Int. Cl. B26d *3/00*
U.S. Cl. 83—140 **5 Claims**



A blow molding apparatus for forming containers from organic plastic material wherein the container is formed with an expanded radially extending wall at the finish of the container so that the flash and moile material can be removed by a die cut or blanking operation of the apparatus.

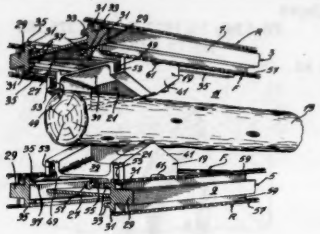
3,783,725
MECHANICAL SHEARS

Marcel Payeur, Plessisville, Quebec, Canada, assignor to Forano Limitee, Plessisville, Quebec, Canada

Filed Apr. 26, 1972, Ser. No. 247,666
Int. Cl. B26d *1/56;* **B27b** *23/00*
U.S. Cl. 83—326 **18 Claims**

The invention is in mechanical shears for slashing tree stems into logs. It is formed of a pair of conveyor assemblies including endless tracks of which the forward portions are mounted so as to face one another and be inclined toward one another whereby to define therebetween a tapering passage along which the stems to be slashed are moved; the wide end of the passage being the inlet end and the narrow one, the outlet end. The tracks have, mounted thereon, an equal number of shear blocks spaced from one another a distance equal to the length of logs desired, the shear blocks each having a shear blade projecting laterally outwardly of the respective track. The blocks are so located along the tracks that the cutting edge of a shearing blade of one block edgedly faces the cutting edge of a shearing blade of a block on the other conveyor track when

the blocks ride along the track forward portions. Because the latter are inclined toward one another, the blades move



toward one another and thus shear any tree stem fed into the tapering passage.

3,783,726

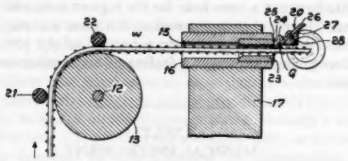
WIRE CUTTING APPARATUS

John L. Marks, Peabody, Mass., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Continuation of Ser. No. 147,097, May 26, 1971, abandoned. This application Mar. 19, 1973, Ser. No. 342,336

Int. Cl. B26d *5/22*

U.S. Cl. 83—355 **5 Claims**



This is an invention for wire cutting apparatus. A drive shaft is coupled both to means for continuously feeding wire and rotating means for cutting and providing clearance for the continuously fed wire.

3,783,727

VEGETABLE CUTTING AND SLICING MACHINE

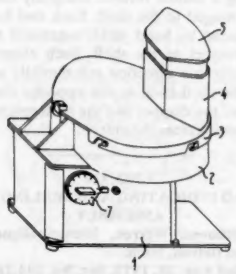
Francois C. Brignard, 1 Bis rue du Marechal Joffre, Nice, and Jean E. Lefranc, "La Montagne", Beaune, both of France

Filed Apr. 8, 1971, Ser. No. 132,408

Claims priority, application France, Apr. 9, 1970, 7012908

Int. Cl. B26d *5/08*

U.S. Cl. 83—592 **3 Claims**



A machine adapted to slice vegetables, and particularly potatoes, and especially a machine adapted for cutting slices of various desired shapes, such as flat slices, wavy slices, chequered wavy slices and substantially cubical shaped pieces.

3,783,728

NEEDLE TABLE FOR PADDING OF PATTERN FABRICS

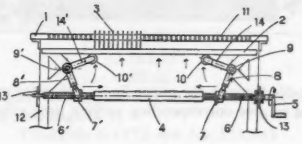
Leon Glasman, 30 Boulevard de Strasbourg, Paris, and Jean O. Prioux, 3 Villa de l'"Alliance, Sannois, both of France

Filed May 15, 1972, Ser. No. 253,621

Claims priority, application France, May 14, 1971, 7117465

Int. Cl. B26f *1/24*

U.S. Cl. 83—620 **3 Claims**



An apparatus for padding of pattern fabrics wherein said padding and fabric are supported upon a table having a plurality of holes or aperatures or the like to permit the passage of a plurality of needles positioned beneath said table. The holes or aperatures serve as guiding means for the needles as they are raised for the purpose of penetrating the padding and fabric.

3,783,729

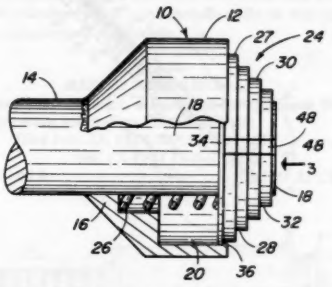
TOOL HOLDER

Edward L. Parr, El Cajon, Calif., assignor to Wendell L. Thompson, Burbank, Calif.

Filed Oct. 26, 1972, Ser. No. 301,186

Int. Cl. B27b *5/32*

U.S. Cl. 83—666 **4 Claims**



A tool holder for circular tools, such as saws, the tool holder having a recess. A sleeve is adapted to be received in the recess, the sleeve having at least two concentric, circular and stepped shoulders that are parallel with the axis of the sleeve, each shoulder being adapted to be received by tools having different and complementary diameter eyes. The holder also having removable means for readily clamping tools thereto.

3,783,730

MUSIC BOX

James B. Waters, Jr., 12111 Parklawn Dr., Suite 206, Rockville, Md.

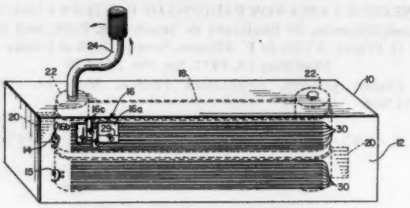
Filed June 29, 1973, Ser. No. 375,131

Int. Cl. G10f *1/06*

U.S. Cl. 84—94 **22 Claims**

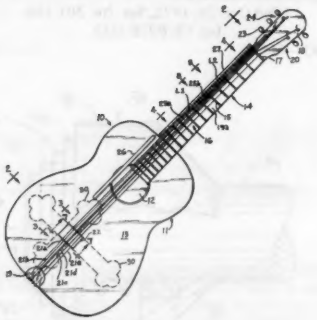
An improved music box having an internal rotatable endless belt carrying a pair of swiss reeds offset 180° one from the

other and a box enclosure with two lines of music on one long side of the box. Swiss reed actuating pegs in the form of notes



are insertable through the music lines. The notes are of varying widths to give corresponding varying time values for the notes.

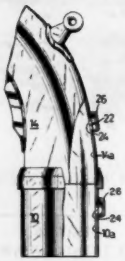
3,783,731
CHROMATIC MULTIPLE STRINGED MUSICAL INSTRUMENT
James E. Pash, 1025 W. Gladstone St., La Puente, Calif.
Filed May 9, 1972, Ser. No. 251,641
Int. Cl. G10d *1/00*
U.S. Cl. 84—173 **9 Claims**



The disclosure is of a chromatic, multiple stringed, musical instrument having features of conventional banjos, and also features of the sitar of India. As best employed, it comprises a five stringed instrument with each string tightened or loosened to play in any chord. After the strings have been tuned to a chord, a mode is played on a melody string (one of the five).

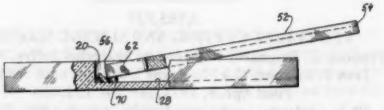
By arranging the strings in a sequence of gauges and by employing a pitch raising peg means critically with relation to string arrangement it is possible to obtain the effects of playing a chromatic melody with a fixed chord tuning. A conventional sitar type bridge may be used to achieve unique string sound. Also a thumb rest may be provided to aid the manual leverage of the player. With this background instrument, mode-stick sets are provided, selectively to be attached beside the neck of the instrument, the respective mode-sticks being color coded to guide finger manipulation upon the melody string with relation to respective frets, in correspondence with various modes, as for instance, with various international musical scales.

3,783,732
WIND-TYPE MUSICAL INSTRUMENT
Yasuharu Ihara, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuka-ken, Japan
Filed July 31, 1972, Ser. No. 276,585
Int. Cl. G10d *7/08*
U.S. Cl. 84—385 **9 Claims**



Herein disclosed is an improved wind-type musical instrument such as a saxophone, wherein at least one outwardly projecting air chamber is formed in a tubular neck section between a mouthpiece and a tubular body section or in that portion of the tubular body section which is located intermediate between a tone-hole for the highest note and the neck section. The air chamber serves as if it were a capacitor in an electric circuit, storing therein a portion of the tonal energy and thus giving the player a feeling of responsiveness and resistance.

3,783,733
MUSICAL INSTRUMENT
Demosthenes Zirimis, 25 Croley St., Huntington, L. I., N.Y.
Filed Dec. 8, 1972, Ser. No. 313,511
Int. Cl. G10d *13/02*
U.S. Cl. 84—402 **4 Claims**

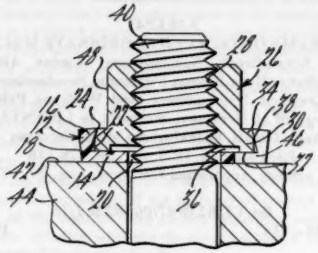


A hand held sound emitting instrument embodying a sounding shell having a handle formed integrally therewith and a clapper freely hinged to the shell. Back and forth motion of the shell produced by hand yields rotational motion of the clapper with respect to the shell. Such clapper rotation is limited by a stop in a direction substantially away from the shell and by the shell itself in the opposite direction. Sharp contact between the clapper and the shell results in a particular sound emanating from the unit.

3,783,734
CLAMP LOAD INDICATING AND SEALING FASTENER ASSEMBLY
Arthur E. Velthoven, Werren, Mich., assignor to Federal Screw Works, Detroit, Mich.
Filed Aug. 28, 1972, Ser. No. 284,284
Int. Cl. F16b *31/02*
U.S. Cl. 85—62 **7 Claims**

A fastener assembly in which a plastic member is snap fitted on a threaded metallic fastener. As the fastener is tightened

the plastic is extruded into the fastened joint. When the clamp load reaches a predetermined value, the plastic is severed by



the fastener, causing the outer peripheral portion of the plastic to fall off the fastener. This gives a visible signal that the desired clamp load has been reached.

3,783,735

APPARATUS FOR PREPARING AND PACKAGING STICK SLURRY EXPLOSIVES

Charles H. Murphy, Northumberland, England, and Lex L. Udy, Salt Lake City, Utah, assignors to Ireco Chemical, Salt Lake City, Utah

Filed Mar. 2, 1972, Ser. No. 231,162
Int. Cl. C06d *1/08*
U.S. Cl. 86—20 R **4 Claims**

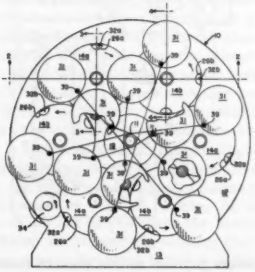
Packaged sticks of stiff slurry blasting composition are produced by apparatus and method which (1) form a slurry of pumpable consistency by blending together a solution of inorganic oxidizer salts, such as ammonium nitrate, sodium nitrate and/or others with solid fuels and/or sensitizers, (2) pump the slurry, by means of an air-diaphram pump, through a hollow mandrel or tube, (3) package the extruded slurry as it emerges from the mandrel by encompassing the composition in a packaging material of tubular shape, which is either surrounding or sealed around the extruded slurry, (4) performing a tying and cutting operation between successive lengths to form sticks as they are filled, and (5) conveying the filled sticks to packaging or delivery, all in a continuous process.

3,783,736

BRAIDING MACHINE

Donald Richardson, 70 Grandview Blvd., Wyomissing Hills, Reading, Pa.

Filed Aug. 14, 1972, Ser. No. 280,631
Int. Cl. D04c *3/02, 3/40*
U.S. Cl. 87—29 **14 Claims**



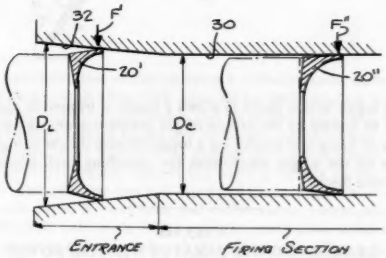
A maypole-type braider for the reinforcing of hose and other tubular products and for the production of ropes, cables and the like, having mechanism for directing strand supply carrier spindles in intersecting serpentine paths around a braiding point, the mechanism including a circle of carrier spindle drivers, cooperating means on the drivers and carrier spindles for retaining each carrier spindle in contact with a driver while it is being driven thereby and for transferring each carrier spindle from a driver to a next adjacent driver of the circle, said cooperating means eliminating the necessity of a track plate or other stationary part acting upon the carrier spindles, the braider also including means for maintaining a strand pay-off point of each carrier substantially on a line drawn through the center of the spindle and the braiding point during the travel of the carrier spindles in their serpentine paths around the braiding point, the last-mentioned means contributing to the operation of the carrier spindle retaining and transfer means.

3,783,737

SEAL

Eugene Ashley, Burlington, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Feb. 4, 1972, Ser. No. 223,643
Int. Cl. F41f
U.S. Cl. 89—7 **3 Claims**



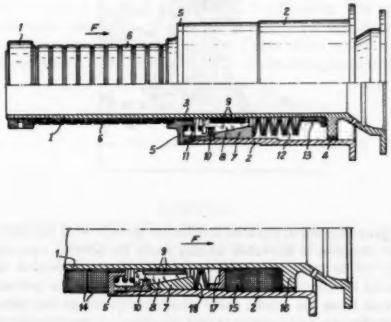
A liquid propellant gun is provided with a seal and a multi diametered chamber which centripetally deflects the seal to generate a preseating force thereon.

3,783,738

RECOIL ABSORBER

Patrice Pelat, Paris, France, assignor to International Vibration Engineering and Avions Marcel Dassault

Filed Feb. 23, 1972, Ser. No. 228,523
Int. Cl. F41f *19/04*
U.S. Cl. 89—44 R **21 Claims**



Recoil absorber comprises combination of spring means and friction means for absorbing a part of the energy imparted

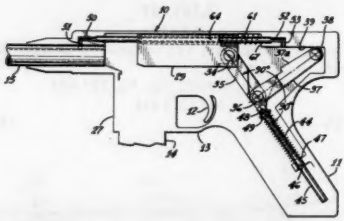
to a weapon when it is fired. The friction means is arranged to absorb energy only during the recoil, but not when the weapon is being restored to its initial position.

3,783,739

GUN TOGGLE MECHANISM WITH BIASING MEANS POSITIONED IN PREDETERMINED AREA ON TOGGLE TO ABSORB SHELL EXPLOSIVE REACTIVE FORCES

Walter E. Perrine, 11833 W. Olympic Blvd., Los Angeles, Calif.

Filed Dec. 7, 1971, Ser. No. 205,533
Int. Cl. F41d *3/02*
U.S. Cl. 89—189 12 Claims



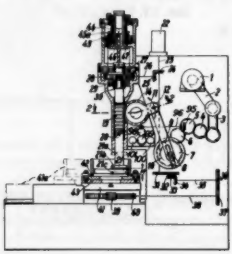
A toggle action pistol in which a toggle is tripped to recede into its handle by the effects of gas pressure generated at the time of firing and employing a toggle biasing means in a given area on the toggle mechanism for absorbing shell explosive reactive forces.

3,783,740

GEAR SHAPING APPARATUS WITH IMPROVED CUTTER RETRACTION ARRANGEMENT

Walter Seiberlich, Ettlingen, Germany, assignor to Maschinenfabrik Lorenz Aktiengesellschaft, Ettlingen, Germany

Filed Sept. 25, 1972, Ser. No. 291,566
Claims priority, application Germany, Sept. 25, 1971, P 21 47 923.2
Int. Cl. B23f *23/00*
U.S. Cl. 90—7 15 Claims



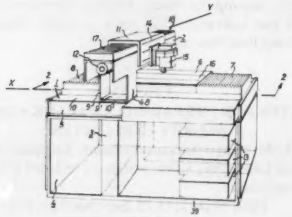
A gear shaping apparatus in which a spindle with the cutting wheel thereon is movable axially from its normal operating range to a retracted position to facillitate insertion and removal of the work piece. A retracting drive is provided separate from the stroke drive which reciprocates the spindle axially for normal cutting. For retraction of the spindle, the stroke drive is first disengaged from its driving connection to the spindle, after which the retracting drive is drivingly engaged with the spindle to retract the same. The retracting drive may be a fluid operated piston and cylinder unit operably connected to the spindle or a separate motor attached to a shaft which is permanently drivingly engaged with the spindle.

3,783,741

PROGRAM CONTROLLED COORDINATE MACHINE

Gerhard Schadebrodt, Neu-Isenburg; Gustav Altzschner, Kleinosiheim; Hans-Helmut Feldmann, Neu-Isenburg; Bernhard Graichen, Neu-Isenburg, and Wolfgang Pabst, Neu-Isenburg, all of Germany, assignors to LICENTA Patent-Verwaltung-GmbH, Frankfurt am Main, Germany

Filed Aug. 30, 1971, Ser. No. 176,118
Claims priority, application Germany, Aug. 29, 1970, P 20 42 912.3
Int. Cl. B23b *47/00*; B23c *1/16*
U.S. Cl. 90—13 C 10 Claims



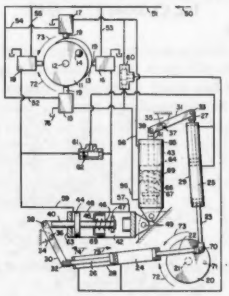
A program controlled coordinate machine including at least two separately functioning coordinate modules each including a bed on each of which a carriage is supported for movement. One of the modules is supported by the other module which in turn is supported by a support module. The support is such that the carriages move in defined perpendicular directions with respect to each other. The support module is enclosed by a housing module which also supports electronic modules which house the electronic components required for machine control.

3,783,742

REMOTE ROTARY CONTROL

Jack R. Kobelt, 235 E. 5th Ave., Vancouver, Canada

Filed July 27, 1972, Ser. No. 275,489
Int. Cl. F15b *11/18*
U.S. Cl. 91—413 9 Claims



This disclosure pertains to that class of remote rotary controls wherein an actuated rotary element situate remote from a control rotary element duplicates or reproduces the rotary action of the control element. More particularly, my present invention provides for a remote rotary following action which

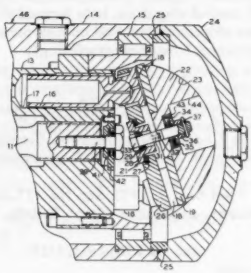
is infinitely variable and infinitely continuous in either direction of rotation. A rotary control head and a rotary actuator are rotatably mounted on a common base means. A cam integral to the control head sequentially actuates a plurality of pressure varying control valves as the head is rotated. Each of the control valves is duct connected to one of a plurality of linear actuators mounted on the base means. Each of the linear actuators is interconnected to an extensible and retractable fluid controlled actuator link; each actuator link is interconnected to the rotary actuator. Each linear actuator is duct connected for fluid flow through a shuttle-valve to the actuator link of an adjacent linear actuator whereby the fluid pressure in each actuator link is substantially inversely proportional to the fluid pressure in its interconnected linear actuator. Sequential actuation of the plurality of control valves by rotation of the control head causes sequential operation of each linear actuator whereby the rotary actuator reproduces the rotation of the control head.

3,783,743

AXIAL PISTON HYDRAULIC TRANSDUCER SHOE RETAINER STRUCTURE

David G. Raymond; Gary C. Smith, Jr., both of Westerville, and Alan H. Viles, Columbus, all of Ohio, assignors to Abex Corporation, New York, N.Y.

Filed Nov. 16, 1972, Ser. No. 307,320
Int. Cl. F01b *13/04*
U.S. Cl. 91—488 **7 Claims**



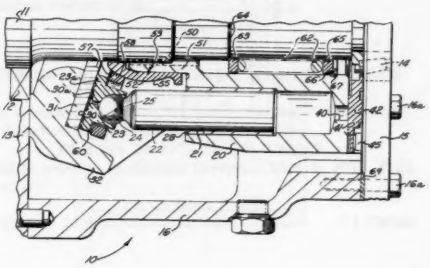
In hydraulic transducer apparatus of axial piston type having a rotatable piston barrel mounted within a body, a rocker cam defining a swash plate having a slip surface pivotally mounted within an accommodating cradle including within the said body, and a plurality of piston structures including piston shoes reciprocatively mounted with such piston shoes disposed in abutting relation with the swash plate. A piston shoe retainer structure is provided operable to urge said piston shoes into even and uniform abutting contact with the swash plate slip surface. The shoe retainer structure comprises: A shoe retainer plate is provided which is rotatable with the pistons and which respectively retains the piston shoes against the slip surface. A spherical retainer socket is disposed to urge the plate and the shoes against the swash plate surface through a thrust bearing, the retainer socket having means cooperating with said rocker cam to prevent rotation of the retainer socket. A fastener means extends into the rocker cam and connects the retainer socket and the retainer plate through a spherical washer universally fitted into the socket. Resilient retainer means, such as a Belleville spring structure, connects the fastener means into prestressed relation with the rocker cam. The shoe retainer structure is operable independently of the piston barrel structure.

3,783,744

HYDRAULIC FLUID DEVICE AND METHOD OF ASSEMBLY THEREOF

Roger J. Benkovic, Marshall, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 24, 1972, Ser. No. 246,829
Int. Cl. F01b *13/04*
U.S. Cl. 92—57 **8 Claims**



A hydraulic fluid device includes a cylinder block, a plurality of pistons with inner ends disposed for reciprocation within cylinders in the cylinder block, and an inclined cam plate having a bearing surface facing one end of the cylinder block. The outer ends of the pistons have bearing means in the form of a slipper which slidably follows the bearing surface on the cam plate. The cylinder block is mounted for rotation relative to the cam plate. A fluid inlet and outlet means communicates successively with ports in the cylinder block upon rotation of the cylinder block relative to the cam plate. The cylinder block has a hub portion projecting therefrom and a spherical collar is pressfit on the hub portion. A slipper retainer plate is supported on the spherical surface of the collar and is engageable with the slipper, and a spring means biases the cylinder block and collar in a direction to create a predetermined clearance which during running provides a clearance between the retainer plate and the slipper.

The hydraulic fluid device is assembled by a process in which the cylinder block is pressfit part way into the spherical collar and the assemblage thereof is placed in the housing of the hydraulic fluid device. A fixture or ram member is then engaged in a cooperative association with the cylinder block and moved inwardly to move the cylinder block farther into pressfitting relationship with the spherical collar. The fixture is then removed and a cover is bolted onto the housing. The spring means then biases the cylinder block and collar in a direction toward the cover for the housing. These steps result in the predetermined clearance referred to above being established.

3,783,745

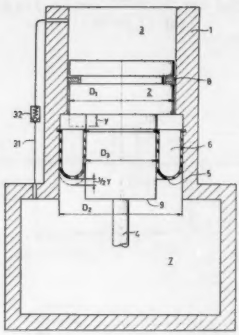
GAS-SUPPORTED ROLLING DIAPHRAGM SEAL FOR PISTON AND CYLINDER ASSEMBLY

Roelf Jan Meijer, and Hendrik Alphons Jaspers, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 26,580, April 8, 1970, abandoned. This application Dec. 23, 1971, Ser. No. 211,406
Int. Cl. F15b *21/04*; F16j *1/19*
U.S. Cl. 92—83 **12 Claims**

A piston and cylinder element in an assembly as in a com-

pressor or hot gas engine, with a rolling diaphragm seal secured between these elements, with supporting gas on both



sides of the seal and a constant pressure differential maintained across the seal.

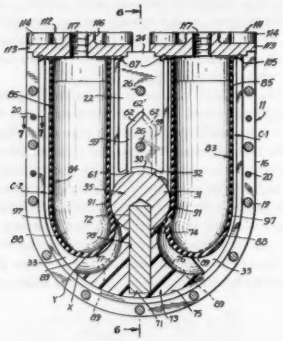
3,783,746
ROTARY ACTUATOR

Alphonse A. Jacobellis, Woodland Hills, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 120,656, May 3, 1971, Pat. No. 3,680,982. This application May 5, 1972, Ser. No. 250,663

Int. Cl. F01c *9/00*

U.S. Cl. 92—121 **20 Claims**



The invention relates to a rotary actuator of the type having a movable vane positioned in an arcuate chamber and secured to and extending radially outward from a shaft extending coaxially with the axis of said arcuate chamber. The arcuate chamber forms a central part of a substantially U-shaped chamber having a pair of legs open at their outer end, each chamber receiving a deformable bladder having a closed end adapted to react against opposed ends of the vane, means being provided to permit fluid under pressure to charge said bladders to effect expansion of one of the bladders for consequent movement of said movable vane and the shaft to which it is secured with resultant compression of the other bladder.

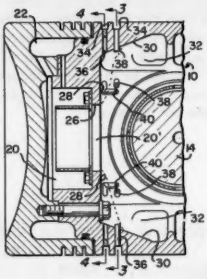
3,783,747
OIL-CONTROLLED PISTON, AND OIL CONTROL MEANS

Raymond N. Alford, Coopers Plains, and Hugh A. Race, Big Flats, both of N.Y., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Sept. 8, 1972, Ser. No. 287,541

Int. Cl. F16j *1/08*

U.S. Cl. 92—160 **5 Claims**



The oil control means, in one embodiment thereof, comprises an elongated conduit formed of a spring pin for insertion into drain holes of a piston to restrict admittance of oil into the drain holes from within the piston. The oil-controlled piston comprises a typical gas-engine-type piston having at least one oil-control-ring drain hole formed therein in which drain hole the aforementioned oil control means has been inserted (for instance, by way of retrofitting).

3,783,748
CAM FOLLOWER PISTON

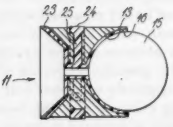
Sinclair Upton Cunningham, Glasgow, Scotland, assignor to National Research Development Corporation, London, England

Filed Sept. 2, 1971, Ser. No. 177,266

Claims priority, application Great Britain, Sept. 2, 1970, 42010/70

Int. Cl. F16j *1/02, 1/10*

U.S. Cl. 92—249 **2 Claims**



A piston adapted to carry a cam follower and particularly for use as a ball or roller piston in a hydrostatic pump or motor, comprises a piston body having a seating at one end, an insert of low friction material which is shaped to provide in the seating a bearing for the cam follower, and means for securing the insert to the piston body. The piston body preferably has a recess or aperture communicating with the seating and the insert of low friction material extends into or through the recess or aperture to lock the insert to the piston body. The insert is conveniently made of polytetrafluorethylene, nylon or an acetal material.

3,783,749

CAM FOLLOWER PISTON

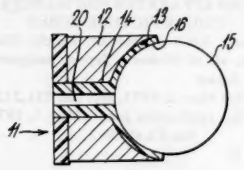
Sinclair Upton Cunningham; James Rutherford Wells, and Donald Firth, all of Glasgow, Scotland, assignors to National Research Development Corporation, London, England

Filed Sept. 2, 1971, Ser. No. 177,265

Claims priority, application Great Britain, June 3, 1971, 18,903/71

Int. Cl. F16j *1/02, 1/10*

U.S. Cl. 92—249 **6 Claims**



A piston adapted to carry a cam follower and particularly for use as a ball or roller piston in a hydrostatic pump or motor, comprises a piston body having a seating at one end, an insert of low friction material which is shaped to provide in the seating a bearing for the cam follower, and means for securing the insert to the piston body. The piston body preferably has a recess or aperture communicating with the seating and the insert of low friction material extends into or through the recess or aperture to lock the insert to the piston body. The insert is conveniently made of polytetrafluorethylene, nylon or an acetal material.

3,783,750

METHOD AND APPARATUS FOR FORMING PACKAGES OF BAGS MADE FROM PLASTICS MATERIAL

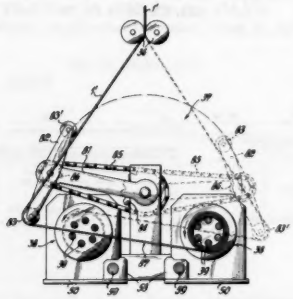
Carolus Lambertus Josephus Antonius Maria Heimeijer, Amsterdam, Netherlands, assignor to Verenigde Fabrieken Van L. J. Heijmeijer N.V., Amsterdam, Netherlands

Filed June 7, 1971, Ser. No. 150,647

Claims priority, application Netherlands, June 9, 1970, 7008368

Int. Cl. B31b *1/00;* **B65h** *19/20*

U.S. Cl. 93—32 **23 Claims**



A method and apparatus for forming a package of plastics bags, wherein a web of flattened tubular bag material is intermittently fed to welding and perforating stations where the web is respectively welded transversely to define the bag bottoms and perforated transversely to form scorelines along which the bags can be separated for use. The intermittent web movement is converted to continuous motion prior to coiling the leading length of web onto rotary prongs of a winding head. The prongs are arranged in a circle, the circle of prongs being contractable to facilitate stripping of the coil. There are two alternately operable such winding heads. While the prongs of one of the heads are not rotating, they are projected longitudinally so that the web being coiled on the other head passes through the circle defined by the stationary prongs. Upon braking said other head and simultaneously setting said one head into rotation, the coiled length is severed from the rest of the web along one of the scorelines and the next coil is formed on said one head.

3,783,751

METHODS AND APPARATUS FOR MAKING SACKS OR BAGS

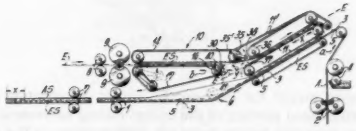
Aloys Winnemoller, Rhine, Germany, assignor to Windmoller & Holscher, Lengerich, Westphalia, Germany

Filed Feb. 29, 1972, Ser. No. 230,360

Claims priority, application Germany, Mar. 6, 1971, P 21 10 815.6

Int. Cl. B31b *39/02*

U.S. Cl. 93—35 R **11 Claims**



A method and apparatus for making bags or sacks which comprise an outer sack and an inner sack, part of which projects from the mouth end of the outer sack. Tube portions for the inner sacks are applied to a web of material for the outer sack, and the web is made into a tube around the tube portions and divided into the lengths required for the individual sacks. The sacks pass through the apparatus with their mouth end leading, the mouth end of each inner sack being folded inwardly by the amount corresponding to the intended projecting part of the inner sack. The apparatus has a double-belt conveyor for passing the inner sack tube portions over a displaceable plate which initiates the inward fold and which then pushes the folded edge into a second double-belt conveyor to complete the fold and convey the tube portion on to the outer sack web.

3,783,752

CARTON OPENING DEVICE

Marinus J. M. Langen, and Jacobus J. Langen, both of Rexdale, Ontario, Canada, assignors to H. J. Langen & Sons Ltd., Rexdale, Ontario, Canada

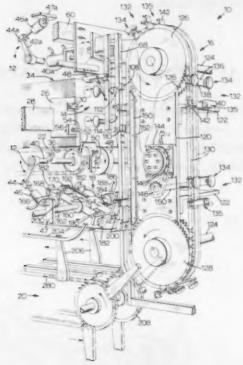
Filed May 9, 1972, Ser. No. 251,765

Int. Cl. B31b *1/76*

U.S. Cl. 93—53 SD **28 Claims**

Improvements in carton loading machines and, in particular, the carton manipulating mechanisms used for opening knocked down cartons. The improvements include a transfer mechanism mounted on a chain so as to be movable in one direction only from a carton loading station to a carton opening station to transfer a carton therebetween. A carton storage means is also provided which includes primary and secondary drive wheels for urging a leading carton to a predetermined pick-off position. The secondary drive wheels are preferably provided at the upper and lower edges of the cartons in the storage means. A suitable detection device is also provided for detecting the presence or absence of a carton at the pick-off position. The detecting means serves to activate the secondary

drive means when the absence of a carton is detected. A carton dispenser is also provided for separating the leading carton from a stack of cartons to facilitate its transfer by providing carton engaging means for engaging an outwardly directed face of the of the outermost carton at at least one predetermined location and actuator means for moving the carton engaging means between an inner position and an outer position



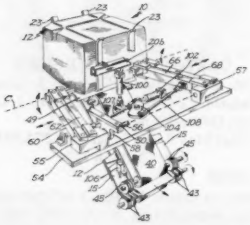
and stop means for limiting the extent of withdrawal of a predetermined portion of the carton during movement of the carton engaging means from the first position to the second position. The present invention also provides a further improvement in the carton device for use in opening knocked down cartons. The improved opening device includes an opening mechanism which is mounted for rotation about a fixed axis in one direction only.

3,783,753

APPARATUS FOR FEEDING FLATTENED, TUBULAR CONTAINER BLANKS

Jack J. Rejsa, Minneapolis, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Filed Nov. 26, 1971, Ser. No. 202,290
Int. Cl. B31b *1/06*
U.S. Cl. 93—58.1 **5 Claims**



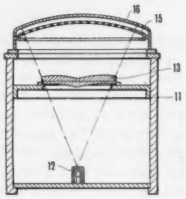
A pair of cooperating, rotating conveying elements are located adjacent to a storage station in which the tubular containers are temporarily stored. The tubular blanks in the storage station are oriented normal to the feed axis of the conveyor with the center of each blank approximately aligned with the conveyor feed axis. A pair of coaxial feeding blades located in the plane of the feed axis extend into the open ends of the blank. The blank when in the storage station is oriented with its open ends spaced along the common axis of the feeding blades. In operation, the feeding blades are moved centrally on their common axis so that their pointed ends extend almost to the center of the tube. The blades are then moved along the conveyor feed axis until the score line of one corner of the blank is driven into the nip of the conveyor. The blades then are raised to their original position and moved apart along their common axis until their tips are withdrawn far enough to clear aligned portions of the blank.

3,783,754

METHOD AND APPARATUS FOR MANUFACTURING COLOR PICTURE TUBES

Takeo Takemoto; Eiich Yamazaki; Koichi Maruyama, and Toshio Ueda, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 2, 1972, Ser. No. 231,312
Claims priority, application Japan, Mar. 5, 1971, 46/11275
Int. Cl. G03b *27/02*
U.S. Cl. 95—1 R **14 Claims**



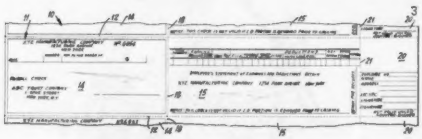
In a method of manufacturing a colour picture tube wherein the phosphor coated on the inner surface of the panel of the tube is exposed to the light emanated from a source of light and transmitting through a correction lens having a discontinuous surface, the phosphor is exposed to the light while continuously changing the relative positions of the panel, the source of light and the correction lens thereby uniformly exposing the phosphor.

3,783,755

APPARATUS FOR APPLYING INDICIAS TO SHEETS

Herbert Lagin, 31 Deer Park Rd., Great Neck, N.Y.

Continuation of Ser. No. 885,456, Dec. 16, 1969, abandoned.
This application June 5, 1972, Ser. No. 260,002
Int. Cl. G03b *17/24*
U.S. Cl. 95—1.1 **4 Claims**



This combination payroll check, data and identification sheet is prepared on a computer. One prepunched computer card controls typing on the check and on the data section of the sheet. Attached thereto is an identification section controlled by an identification card prepunched for proper stacking and carrying a photo of the employee, and a replica of his signature. This identification is photocopied on the identification section. When the check is being cashed, the photo can be looked at to identify the employee and the em-

ployee countersigns on the identification section, thus making doubly sure that the check is not cashed by an unauthorized person.

3,783,756

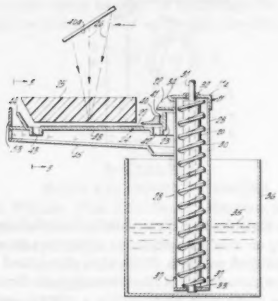
EXPOSING AND DEVELOPING APPARATUS FOR PHOTOGRAPHIC COMPOSING DEVICE

Murray Friedel, North Miami, Fla., assignor to Visual Graphics Corporation, New York, N.Y.

Filed May 10, 1972, Ser. No. 249,262

Int. Cl. B41b *13/00*

U.S. Cl. 95—4.5 **5 Claims**



An exposing and developing apparatus for a photographic composing device in which the photosensitive material to be exposed and developed is transported through a series of cells. Each cell has a transparent block overlying but spaced from the photosensitive material. Pumps deliver the developing and fixing solutions to the space between the blocks and the surface of the photosensitive material in a constant flow to insure uniform coverage of said material and minimize solution deterioration.

3,783,757

PHOTOGRAPHIC APPARATUS FOR THE MAKING OF EXPOSURES IN ARTIFICIAL LIGHT

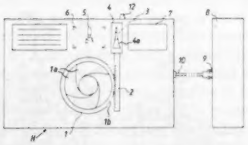
Karl Wagner, Ottobrunn; Otto Rosenberg, Grunwald, and Adam Hummel, Munich, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 14, 1972, Ser. No. 234,576

Claims priority, application Germany, Mar. 16, 1971, P 21 12 599.5

Int. Cl. G03b *15/05*

U.S. Cl. 95—10 CE **10 Claims**



A still camera wherein the main diaphragm can be adjusted by a focussing ring is coupled with or incorporates an electric flash unit wherein a photosensitive receiver which measures the amount of light reflected from the subject is located behind an adjustable auxiliary diaphragm. The auxiliary diaphragm is adjustable with the main diaphragm to change the threshold value of the control circuit of the flash unit. The motion transmitting connection between the main diaphragm and the auxiliary diaphragm is separable in response or prior to detachment of a removable flash unit so that the main diaphragm can be adjusted by the focussing ring when the flash unit is detached or when the housing of the camera is connected with a different flash unit.

3,783,758

COMPOUND LIGHT RECEIVING ELEMENTS FOR EXPOSURE METERS

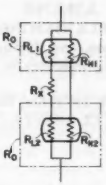
Kayoshi Tsujimoto, Osaka; Kotaro Yata, Ikeda, and Motonobu Matsuda, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

Filed Dec. 6, 1971, Ser. No. 204,832

Claims priority, application Japan, Dec. 10, 1970, 45/109168

Int. Cl. G01j *1/52*

U.S. Cl. 95—10 C **7 Claims**



A photometric device for generating an electric signal related to coincident light intensity comprises a number of photoresponsive means each including first and second photoconductive elements having response characteristics such that the logarithm of resistance to the logarithm of light intensity are respectively proportional over different ranges of light intensity. Additionally, the first photoconductive element in each of the photoresponsive means has a higher sensitivity than that of the second photoconductive element. The first and second photoconductive elements are positioned to receive light for different areas of the objective field. The first and second photoconductive element of each photoresponsive means are specifically interconnected with similar elements of another photoresponsive means to enhance the light response characteristics.

3,783,759

ELECTRONIC EXPOSURE CONTROL ARRANGEMENT IN PHOTOGRAPHIC APPARATUS

Karl Wagner, Ottobrunn, and Klaus Nicolay, Gruenwald, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 63,096, Aug. 12, 1970. This application Mar. 19, 1973, Ser. No. 342,807

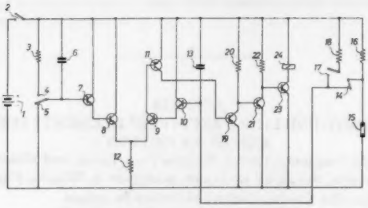
Claims priority, application Germany, Aug. 20, 1969, P 19 42 287.8

Int. Cl. G03b *7/08, 9/62*

U.S. Cl. 95—10 CT **3 Claims**

One input of a differential amplifier is connected to a charging or discharging capacitor and the other input to a discharging capacitor that has previously been charged to the voltage across one leg of a voltage divider consisting of a photocon-

ductor and a resistor connected in series across a battery. When the voltages at the two inputs are approximately equal,



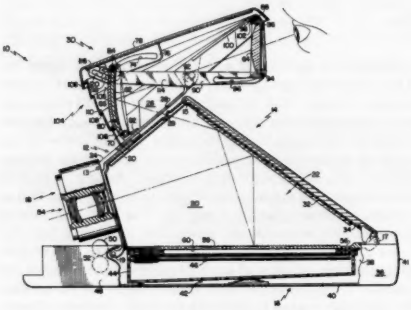
one branch of the differential amplifier shuts off, de-energizing the shutter control magnet and closing the camera shutter.

3,783,760

COLLAPSIBLE VIEWING DEVICE

Joseph H. Allen, Needham, and Richard R. Wareham, Marblehead, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 20, 1972, Ser. No. 245,967
Int. Cl. G03b *19/12*
U.S. Cl. 95—11 V **11 Claims**



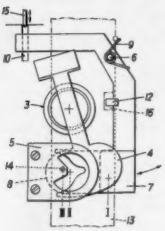
A compact folding camera including a plurality of housing sections coupled to each other for movement between folded and extended positions and a collapsible viewing device mounted on one of the housing sections for movement between inoperative and operative positions. An elongated link structure is pivotally coupled intermediate its ends to one of the housing sections and has its opposite ends pivotally and slidably coupled to the viewing device. One end of the link structure is mounted in position to be engaged and rotated by a second housing section, during movement of the housing sections into the folded position, to move the viewing device into its inoperative position. When the camera and the viewing device are in their folded positions, inadvertent movement of the viewing device into its extended operative position is precluded by the engagement between the end of the link structure and the second housing section. Movement of the housing sections of the camera toward the extended position is effective to move the second housing section in a direction away from the end of the link structure, thereby allowing rotation of the link structure to move the viewing device toward the extended operative position.

3,783,761

EXPOSURE CONTROL DEVICE FOR PHOTOGRAPHIC CAMERAS

Josef Schild, Vienna, and Harald Wessner, Neunkirchen, both of Austria, assignors to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Filed Dec. 11, 1972, Ser. No. 313,696
Claims priority, application Austria, Dec. 9, 1971, 10617
Int. Cl. G03b *11/00*
U.S. Cl. 95—11 R **9 Claims**



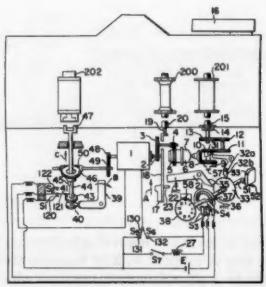
In a camera an objective is provided which defines an optical path having an axis. The objective comprises an adjustable diaphragm arranged within a diaphragm plane, and a neutral density spot cooperating with the diaphragm to diminish light intensity in the diaphragm plane within a central range on the axis. A gate is arranged on the optical path in a plane normal to the axis and receiving light through the objective for exposure of a film having a specific spectral sensitivity. A support is provided to carry the neutral density spot and has at least an inoperative and an operative position, in the operative position the neutral density spot is arranged in a central position on the axis, and in inoperative position the neutral density spot is excentric to the axis. A control device is connected to the support to control its position, the control device having at least two positions according to the spectral composition of light used for exposure of the film, whereby with artificial light the support is in the inoperative position, with day light the support means is in operative position.

3,783,762

MOTOR DRIVE FOR A CAMERA

Shiro Sugimori, Tokyo, Japan, assignor to Nippon Kagaku K.K., Tokyo, Japan

Filed July 13, 1972, Ser. No. 271,628
Int. Cl. G03b *19/04, 1/60, 17/36*
U.S. Cl. 95—31 EL **7 Claims**



A motor drive for a camera has a motor drive system which comprises a motor, a circuit for driving the motor including

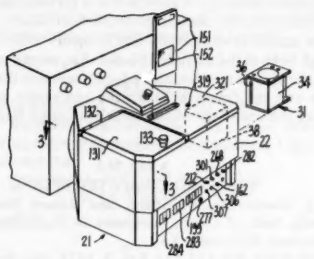
two switches, means for blocking film transportation in a rewinding direction, a first manually operable member connected to the rewind blocking means and movable between first and second positions, and a second manually operable member for engagement with a supply spool and connected to the motor and movable between first and second positions. One of the two switches in the circuit may be opened and closed in response to movement of the first operable member to its first and second positions, respectively. In the second position of the first operable member, the rewind blocking means is rendered ineffective. The other switch is opened and closed in response to movement of the second operable member to its first and second positions, respectively. In its second position, the second operable member is engageable with the supply spool so that the spool may be rotated by the drive from the motor to take up the film thereon.

3,783,763

DATA RECORDING CAMERA

Ernest M. Whitley, Palo Alto; Don L. Beaman, and William S. McCombie, both of Sunnyvale, all of Calif., assignors to Redlake Corporation, Santa Clara, Calif.

Filed Dec. 29, 1971, Ser. No. 213,320
Int. Cl. G03b *1/32, 17/22, 19/02*
U.S. Cl. 95—31 EL **15 Claims**



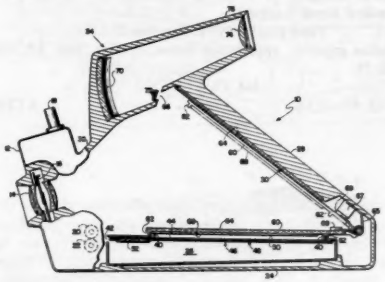
A data recording camera for periodically photographing oscilloscope displays, using a self-threading takeup cassette which may be removed without fogging remaining film, and a solenoid-driven pivoted-blade shutter which closes during automatic film advancing. Film is supplied from a supply spool and automatically severed adjacent the cassette by a solenoid-driven knife prior to release of the cassette from the camera. Data is projected from the oscilloscope face onto the emulsion side of the film by a lens system, and a removeable data slide may have the data written on it contact printed onto the rear side of the film by an internal lamp. The film is automatically advanced before and after the data card is projected onto it, and the camera is disabled during operations likely to fog the film. The interlocks also disable the camera when the cassette is not in place, when it is full, when the camera is out of film and when the film supply compartment is open. The electronic control circuit controls the duration of shutter opening, with decade incremental selection of duration, and also boosts shutter opening by applying an initial opening voltage higher than the subsequent holding voltage. Delay circuits allow the shutter to begin closing before the film is moved, and hold the shutter closed to allow time for film movement to be completed.

3,783,764

REFLEX CAMERA AND VIEWING DEVICE

James G. Baker, Winchester, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 98,356, Dec. 15, 1970, abandoned.
This application June 21, 1972, Ser. No. 264,933
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **96 Claims**



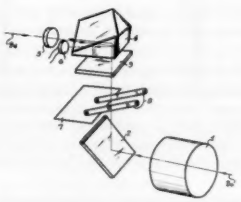
The specification describes a reflex camera and a viewing device particularly suited for use with it which forms an erect, unreverted viewing image of a subject to aid a user in focusing and aiming the reflex camera. One version of the viewing-device employs the reflex camera's mirror to direct light from a reflective focusing screen to an approximately ellipsoid concave mirror. An eye lens magnifies a real image formed by the concave mirror. Another version of the viewing device uses a hemispherical lens, having a substantially plano mirror on its rear surface, to form a real image and a concave mirror used obliquely to magnify the image for an observer.

3,783,765

PHOTOMETRIC DEVICE IN A SINGLE LENS REFLEX CAMERA OF THROUGH-THE-LENS TYPE

Naoyuki Uno, Oimachi; Katsuhiko Nomura, Kawagoe; Tadazumi Sakazaki; Koichiro Watanabe, both of Tokyo; Katsuhiro Miyata, Kawasaki, and Fumio Urano, Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Aug. 7, 1972, Ser. No. 278,226
Claims priority, application Japan, Aug. 9, 1971, 46/70450
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **8 Claims**



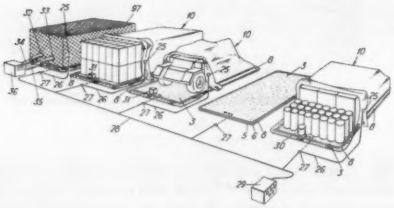
A single lens reflex camera of through-the lens type having an objective lens, a pentaprism, a snap-up mirror and a viewfinder and providing a light path for an image between the objective lens and the viewfinder across the mirror and through the pentaprism. An electrically controlled shutter system of through-the-lens type is provided having a photosensitive sensing element located in the light path and in the path of

light from the viewfinder. A light intercepting means is provided together with means for moving the light intercepting means into and out of the light path at a position along the light path in between the pentaprism and the mirror.

3,783,766
ENCLOSURES

Reginald Comyn Boucher, Millsted, near Sittingbourne, England, assignor to E. P. S. (Research & Development) Limited, Kent, England

Filed Feb. 3, 1972, Ser. No. 223,234
Claims priority, application Great Britain, Feb. 10, 1971, 4,330/71
Int. Cl. F24f 7/02
U.S. Cl. 98—33 R **6 Claims**

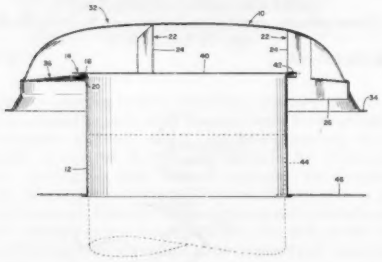


The invention concerns enclosures having especial application in relation to storing equipment liable to atmospheric deterioration comprising a rigid base having a strip peripherally secured thereto with coupling means sealingly to connect the strip to a bag-like cover to provide a generally weather proof enclosure.

3,783,767
ROOF VENTILATOR

James E. Stalker, Richardson, Tex., assignor to Home Metal Products Company, Plano, Tex.

Filed July 10, 1972, Ser. No. 270,309
Int. Cl. F24f 7/02
U.S. Cl. 98—42 **3 Claims**

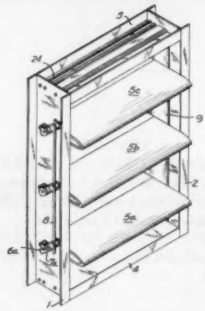


A roof ventilator includes a tubular member extending to an upper flange defining an upper sealing edge and providing a radially outwardly extending lip which prevents moisture from entering the ventilator. Three tabs are mounted at circumferentially spaced points around the tubular member and support a cover which extends over the tubular member and downwardly to a flange positioned below the upper sealing edge. An annular screening section extends between the tubular member and the cover to prevent foreign objects from entering the ventilator. A plate is normally engaged with the upper sealing edge under the action of gravity to seal the ventilator and includes slots which receive the tabs to guide the plate for vertical movement out of engagement with the sealing edge in response to pressure developed within the tubular member.

3,783,768
DAMPER ASSEMBLY

Lionel P. Caming, New York City, and Frank J. Fromwiller, New City, both of N.Y., assignors to Imperial Damper Co., Inc., Bronx, N.Y.

Filed Oct. 14, 1971, Ser. No. 189,085
Int. Cl. F24f 13/08
U.S. Cl. 98—110 **13 Claims**

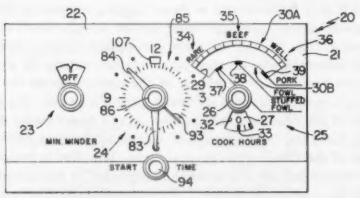


A damper assembly is provided in a rectangular frame with streamlined blades rotatable on parallel shafts. The shafts may be square in section and ride in square orifices extending through hubs of the extruded blades. Air, smoke or other gaseous leakage is immeasurably reduced between the ends of the blades and the frame by a unique composite seal disposed between the end of the blades and the damper frame.

3,783,769
COOKING COMPUTER MEANS

Carl J. Goodhouse, Litchfield, and Robert Strachan, New Haven, both of Conn., assignors to Robertshaw Controls Company, Richmond, Va.

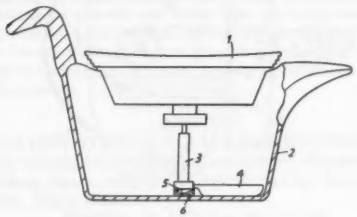
Division of Ser. No. 112,132, Feb. 3, 1971, Pat. No. 3,688,978.
This application July 19, 1972, Ser. No. 273,134
Int. Cl. A47j 27/086
U.S. Cl. 99—332 **10 Claims**



A cooking computer for determining the cooking operation of a cooking apparatus, the computer having a stationary input means indicating selectable variables other than the weight of a meat item. The computer has a manually settable weight input means for indicating a single selected indicated weight applicable to all meat items and corresponding to the weight of a particular meat item to be cooked, the weight input means being settable in relation to a selected variable of

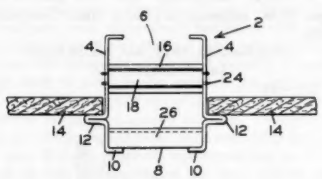
the stationary input means. The computer has a time period output means operatively associated with the input means to provide as an output a cooking time period for the particular meat item computed as a function from the selection of both of the input means according to a cooking formula.

3,783,770
STIRRER DEVICES FOR CULINARY PURPOSES
Graham John Aries, 30 Worcester Ln., Pedmore, Stourbridge, England
Filed Oct. 15, 1971, Ser. No. 189,643
Claims priority, application Great Britain, Oct. 20, 1970, 49,774/70
Int. Cl. A47j *43/044, 43/07;* **B01f** *7/16*
U.S. Cl. 99—348 **6 Claims**



A cooking vessel or a lid therefor is described, having a shaft journalled for rotation by drive means and one or more wiper arms connected to the lower end of the shaft and positioned so as to wipe the major portion of the upper surface of the base of the cooking vessel as the shaft is rotated.

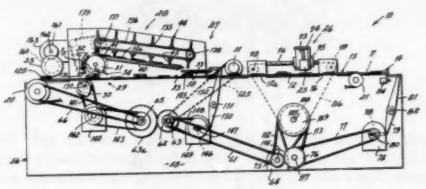
3,783,771
SPACER FOR A FIRE-RATED AIR BAR
Lyndon G. Hartzell, Gaithersburg, Md., and James C. Ollinger, Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.
Filed May 1, 1972, Ser. No. 249,039
Int. Cl. F24f *13/06*
U.S. Cl. 98—40 D **5 Claims**



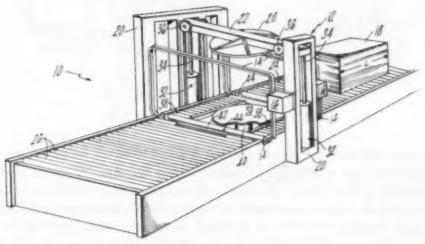
An air bar has supports made of a low temperature melting point material located between the side rails. A high temperature melting point spacer assembly is frictionally fitted between the side rails of the air bar, at periodic points along the air bar, to support the side rails and prevent their collapse in a fire.

3,783,772
SANDWICH MACHINE
Rudolph J. Fay, 6911 Wildflower Trail, Cincinnati, Ohio
Filed Sept. 17, 1971, Ser. No. 181,476
Int. Cl. A21c *15/04, 9/08*
U.S. Cl. 99—450.4 **27 Claims**

A sandwich making machine for receiving columns of objects in irregularly spaced and misaligned rows and for automatically aligning those rows, applying topping to alternate ones of the rows, and layering the alternate untopped rows onto the top rows. The machine comprises a reciprocating feeder bar operable upon detection of a predetermined weight of objects at the infeed station to push the objects forwardly onto a continuously moving endless belt conveyer. Simultaneously with the actuation of the pusher bar, a memory circuit is actuated to record the position of the objects on the conveyer. This memory circuit then controls the application of the topping to alternate rows of objects and subsequent pickup, inversion and layering of untopped rows of objects onto topped rows.



3,783,773
APPARATUS FOR ASSEMBLING A BATTEN MOUNTED PACKAGE
Edwin J. Willard, East Longmeadow, Mass., and James Elmore, Simsbury, Conn., assignors to The Stanley Works, New Britain, Conn.
Filed Apr. 20, 1972, Ser. No. 245,807
Int. Cl. B65b *13/06*
U.S. Cl. 100—7 **6 Claims**

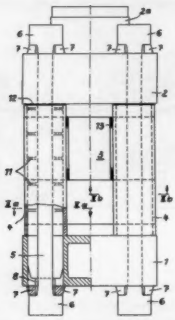


Apparatus for use with a package compression strapping machine including a batten receiving passageway below a lower pressure platen in adjacent spaced relation thereto and a batten lift mechanism in the passageway for raising a batten from a recessed position in the passageway below the lower pressure platen into engagement with a bottom surface of a compressed package and for holding the batten in a controlled position thereon for subsequent engagement and tensioning of strapping about the batten and compressed package.

3,783,774
PRE-STRESSED PRESS FRAME
Horst Hans Groos, Metzkausen, and Walter Zander, Krefeld, both of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany
Filed Aug. 6, 1971, Ser. No. 169,630
Int. Cl. B30b *1/00*
U.S. Cl. 100—214 **11 Claims**

It is known to provide a pre-stressed frame for a hydraulic press in which the frame has two opposed cross-heads with

thrust members spacing the cross-heads apart and traction members drawing the cross-heads against the thrust members and thus pre-stressing the frame. There is provided a simpler



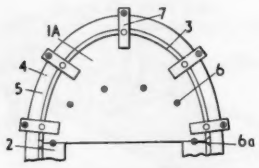
construction which is easier to manufacture, and which is not so susceptible to notch stresses, by having the traction members in the form of plates.

3,783,775

STANDS FOR PRESSES

Baltzar Carl Von Platen; Finn Lennart Jonsson, and Sten Trolle, all of Ystad, Sweden, assignors to Etablissement Radiator, Vaduz, Liechtenstein

Division of Ser. No. 72,358, Sept. 15, 1970, Pat. No. 3,687,066.
This application May 19, 1972, Ser. No. 254,910
Int. Cl. B30b *1/00*
U.S. Cl. 100—214 **3 Claims**



This invention relates to stands for high pressure presses. Such presses are often of a type including a pair of yokes, separated by a pair of uprights and surrounded by a girdle built up from prestressed steel strip. In order to reduce the piece weight and increase the strength of such presses, it is now proposed to build up the yokes, and preferably also the uprights, from sections arranged in face to face relationship. Each section is similar in shape to its fellows and the sections may be bolted together in closely packed or spaced face to face relationship.

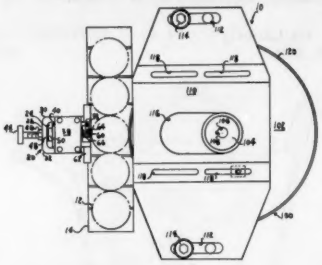
3,783,776

AUTOMATIC MARKING DEVICE FOR METAL OBJECTS

Arthur J. Noble; Edwin W. Speicher, and Walter J. Speicher, all of Pittsburgh, Pa., assignors to M. E. Cunningham Company, Ingomar, Pa.

Filed Jan. 14, 1972, Ser. No. 217,820
Int. Cl. B41f *17/20*
U.S. Cl. 101—7 **3 Claims**

A device for marking metal objects having a conveyor which carries the object to be marked to a marking station positioned between a marker assembly and a drive assembly. The marker assembly includes a housing in which are mounted a chase for holding a plurality of type dies and a block slidable in the housing which forcibly engages the chase by the action of a set screw acting through the block to maintain the desired force upon the chase and type. The marking assembly is connected to the frame of the device by an adjustment assembly which enables adjustment of the angle between the type dies and the preselected surface of the object to be marked. The drive assembly includes a rotating disc mounted in the frame of the device and adjustable in position along a line perpendicular to the line of travel of the objects to be



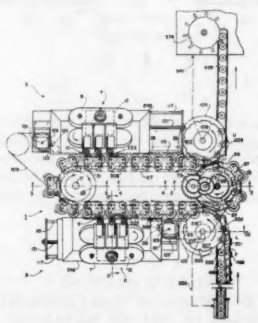
marked past the marking station. The drive disc rotates against the object to be marked to rotate that object in the direction opposite to its direction of linear travel past the marking station to enable the placement of a plurality of marks on the surface of the object. A ring of urethane or other resilient material is mounted around the circumference of the drive disc, and a block of urethane or other resilient material is mounted in the marking assembly between the rear of the chase block and the adjusting screw to absorb partially and limit the forces and stresses applied to the object being marked by the interaction of the marking assembly and the drive assembly.

3,783,777

APPARATUS FOR IMPRINTING OBJECTS SUCH AS BOTTLES AND THE LIKE

Richard J. Killen, Manchester, Mo., and Robert G. Jones, Sapulpa, Okla., assignors to Liberty Glass Company, Sapulpa, Okla.

Filed Nov. 30, 1971, Ser. No. 203,288
Int. Cl. B41f *17/18*
U.S. Cl. 101—40 **46 Claims**



The invention comprises a vertical bottle conveyor, two movable carriages adjacent thereto with a stencil-screen and a

squeegee-circulating conveyor supported on each of the carriages. The squeegee conveyor and the screen are subject to three independent adjustments relative to the bottle conveyor to accommodate various sizes and shapes of bottles. In addition each screen is adjustably tiltable. Each squeegee conveyor slants over a color pool on its support to pick up color by its squeegee strikers and deliver color to one side of the screen for striking therethrough to sides or necks of bottles which substantially roll on the other side of the screen. Each squeegee during travel is driven toward each screen under air pressure, and is air returned, there being included positive mechanical safety return means. Cam means, upon air return, properly positions the strikers to pick up color from rotary drums which lift color from the color pool. Bottles moving from a loading station are fed serially to centering bottle hangers and then to dual rotary bottle carriers on the bottle conveyor. Included are bottle registration means and clutches for initiating substantial rolling of the bottles on the screens. The inputs to the clutches are driven from the bottle conveyor in all positions of the carriages. Change gears are provided to obtain for any bottle diameters equal linear speeds on opposite sides of each screen of striking squeegees and of substantially rolling bottles.

3,783,778

DATA INDICATING DEVICE FOR PRINTING MACHINES

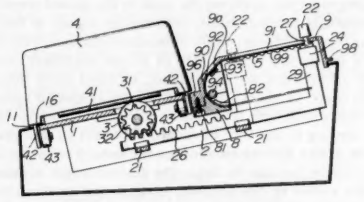
Tetuo Nakada; Noboru Ooyama, and Kenichi Miyazkaki, all of Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Sept. 20, 1971, Ser. No. 181,887

Claims priority, application Japan, Dec. 29, 1970, 45/133079

Int. Cl. B41f *5/08*

U.S. Cl. 101—45 **8 Claims**



The disclosure relates to a data indicating device for printing machines wherein a plurality of rotatable type wheels adjacently aligned, and respectively inscribed with printing numerals on the peripheries thereof are each furnished with a gear at one side thereof, and the same number of rack bars are arranged each to engage the gear of the type wheel, and manual operating end portions of the rack bars project out of the machine housing in spaced relation. To these operating portions are connected flexible data indicating bands bearing on one face thereof numerals corresponding to the printing numerals on the peripheries of the type wheels, and these bands are guided on a concave curved inner surface to windows formed in the machine housing, thereby to indicate at the windows the selected printing numerals corresponding to those on the type wheels which are rotated by manipulation of the operating and portions of the rack bars.

3,783,779

ROTARY SCREEN PRINTING CYLINDER

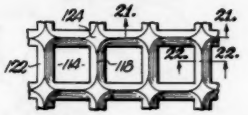
Aaron O. Greenwood, Greenwood; Ramon J. Magee, Independence, and Stanley W. Otto, Platto City, all of Mo., assignors to Hallmark Cards, Incorporated, Kansas City, Mo.

Division of Ser. No. 844,777, July 25, 1969, Pat. No. 3,610,143. This application May 20, 1971, Ser. No. 145,516

Int. Cl. B44a *3/06*

U.S. Cl. 101—127 **4 Claims**

A rotary screen printing stencil is produced by etching techniques. A cylindrical base member is first provided with a layer of etchable material on the outer surface thereof. An etch-resistant coating is provided over selected portions of the etchable material corresponding to the area surrounding the design to be printed and the grid pattern of the printing stencil. The etchable material is then removed in those areas thereof not protected by the etch-resistant coating. The resulting stencil having a foraminous design area with a grid pattern therein and an imperforate section surrounding the design area is then separated from the base member.



3,783,780

INTAGLIO PRINT MACHINE WITH NOVEL ROLL MOUNTING MANDREL AND BUSHING ASSEMBLY

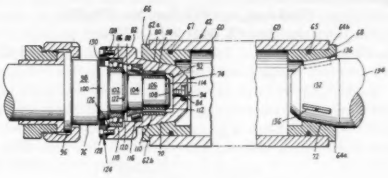
Johann Heinrich Saueressig, 19, Barlerstrasse, Wuellen, Ahaus, Germany

Division of Ser. No. 210,064, Dec. 20, 1971, which is a continuation-in-part of Ser. No. 23,564, March 30, 1970, abandoned. This application Mar. 8, 1973, Ser. No. 339,075

Claims priority, application Germany, Mar. 29, 1969, P 19 16 359.8

Int. Cl. B41f *13/20*

U.S. Cl. 101—153 **8 Claims**



An intaglio print machine for multicolor operation has a multiplicity of pairs of cooperating intaglio rolls and back up rolls rotatably supported on the machine frame and a vertical gate member pivotally mounted on the frame with a multplicity of inking units suppored thereon in vertical spaced alignment and cooperating with the intaglio rolls. The intaglio rolls are of cylindrical configuration and supported upon the frameby novel cone assemblies and novel expandable bushings which press fit in the ends of the cylindrical rolls and are engaged to prevent relative rotation.

3,783,781

DOCTOR BLADE CONTROL MECHANISM, PARTICULARLY FOR USE IN PRINTING PRESSES

Siegfried Grommek, Luisenstrasse 11, D-7600 Offenburg, Germany

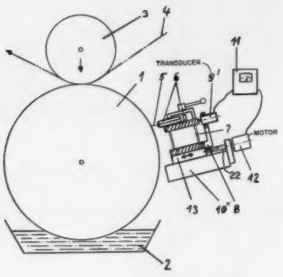
Filed Sept. 20, 1971, Ser. No. 181,767

Int. Cl. B41f *9/10*

U.S. Cl. 101—157 **12 Claims**

To control the application pressure of a doctor blade against a cylindrical surface, for example a cylinder used in rotogravure printing, a parallelogram support for the doctor blade is provided having resilient, parallel arms to hold the doctor blade to move in an essentially radial direction with respect to the cylindrical surface against which the doctor blade is adapted to bear, and a deflection meter is secured to

the doctor blade support, measuring the resilient deflection of the doctor blade holder with respect to the support; the meter may be included in an electrical control circuit which re-sets



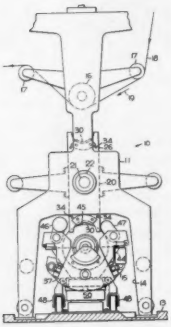
the holder with respect to the support so that the application pressure of the doctor blade against the cylindrical surface will be uniform.

3,783,782

REVOLVING TURRET FOR SUPPORTING PRINTING PRESS CART

David R. Hardt, Milwaukee, Wis., assignor to Faustel Incorporated, Butler, Wis.

Filed Aug. 4, 1972, Ser. No. 278,074
Int. Cl. B41f *9/18, 31/32*
U.S. Cl. 101—216 **15 Claims**



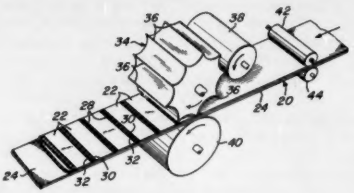
A wheeled printing press cart comprising an ink pan, a removable printing roll, an ink applicator and a doctor blade is insertable and removable in an upright position through an opening in the side of a web type printing press. When inserted, the cart is raised slightly, pivotably connected to a revolving turret on the press, and the turret is rotated 180° to raise the cart to operating position. The turret is further rotatable 180° to return the cart to lowered position in either the upright position or in inverted position. Return of the cart in upright position allows for removal of the printing roll thereon or removal of the entire cart. Return of the cart in inverted position allows it to be automatically flushed or washed while still on the turret. The turret can accommodate two carts simultaneously on opposite sides.

3,783,783

METHOD OF MAKING WEB OF RECORD MEMBERS

Paul H. Hamisch, Sr., Dayton, Ohio, assignor to The Monarch Marking System Company, Dayton, Ohio

Filed Nov. 24, 1970, Ser. No. 92,468
Int. Cl. B41f *13/60*
U.S. Cl. 101—226 **6 Claims**



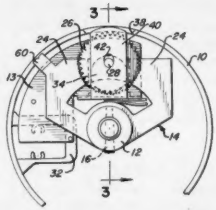
There are disclosed record members in the form of a web of pressure sensitive labels and a web of tickets formed by transverse cuts in the web, with each member having a mark printed at one marginal edge, the mark preferably being printed using invisible ink. A method of making the record members includes the step of inking a cutter and operating the cutter to simultaneously cut the web to provide a plurality of record members and printing along at least one marginal edge of each member. Another record member has an aligner formed in it and a printed mark forming an outline around the aligner, the aligner having a predetermined relationship with respect to a code printed on the record member. A method of making the record member comprises providing code forming members and aligner forming members, inking the aligner forming member, applying the code to the record member and substantially simultaneously forming an aligner in the record member and printing a mark immediately adjacent the aligner. There is also disclosed a web of record members composed either of pressure sensitive ticket, or label stock material in which there are marks disposed at equally spaced apart intervals along its length. The marks are used to control intermittent feeding of the web of record members so that recording can be at any desired location on the record members and the record members can be cut to the desired length without shifting the cutter or the recorder means relative to each other. There is also disclosed apparatus for practicing these methods.

3,783,784

MARGIN CONTROL MEANS FOR DUPLICATOR DRUM

George W. Bookless, Franklin Park, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Apr. 13, 1972, Ser. No. 243,679
Int. Cl. B41f *13/14*
U.S. Cl. 101—248 **7 Claims**



In a duplicating machine which includes a drum mounted on a drive shaft for rotation therewith for carrying a master copy. Coupling means is provided between the drum and drive shaft for providing selective arcuate adjustment of the drum

relative to the shaft to adjust the head margin on a sheet of copy paper fed to the drum. The coupling means includes an eccentric mounted on the drum for movement bodily therewith and for selective rotation relative thereto about an axis parallel to the axis of the drive shaft, and an abutment member fixed to the drive shaft in position for engagement by the eccentric on rotation thereof relative to the drum to cause relative rotation between the drum and drive shaft and, thus, providing angular adjustment therebetween.

3,783,785

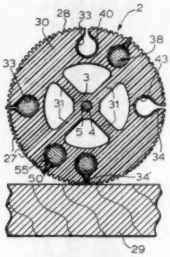
LAYOUT MARKING WHEEL

William Frank, 3N711 Elizabeth St., Addison, Ill., and Frank E. Lindgren, 4818 N. Clifton Ave., Norridge, Ill.

Filed Aug. 14, 1972, Ser. No. 280,448

Int. Cl. B43l *13/00*

U.S. Cl. 101—328 **7 Claims**



A marking device comprising a drum having a plurality axially elongated peripheral receptacles or pockets and cartridges arranged to be inserted into the receptacles from opposite ends of the drum and floatingly supported therein for radial movement which effects a pumping action to force marking fluid into a marking wick and aspiration of excess fluid into the cartridge.

3,783,786

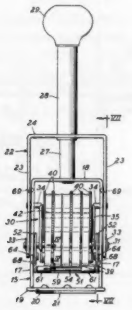
SELF-INKING HAND STAMP

Lynn E. Ellison, 476 Golf Rd., and Charles D. Ellison, 297 S. Virginia St., both of Crystal Lake, Ill.

Filed Mar. 20, 1972, Ser. No. 236,024

Int. Cl. B41f *1/50*

U.S. Cl. 101—333 **16 Claims**



A self-inking hand stamp includes a novel positively indexing, quick-settable character band printing unit structure and a novel inking structure, as well as a simple, rugged and durable arrangement of parts for extended life in hard usage.

3,783,787

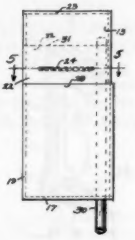
BLASTING CHARGE AND CONTAINER THEREFOR

Gary M. Thornley, Bountiful, and Robert C. Stokes, Sandy, both of Utah, assignors to Ireco Chemicals, Salt Lake City, Utah

Filed Jan. 17, 1972, Ser. No. 218,324

Int. Cl. F42b *3/00*

U.S. Cl. 102—24 R **10 Claims**



The invention is a container especially suitable for packaged blasting charge. A particular embodiment is one of the type used in mines for support on a stick or a pile, at points where a local blast is required as for removal of hang-ups of ore, protruding rock formations, and the like. The container is a bag or envelope of internally valved type, made of preformed flat or folded flexible sheet material, preferably a tough elastic heat sealable polymeric film or sheeting material suitably inturned and sealed to form a self-closing compartment for liquid or flowable slurry explosive. A supplemental pocket may be formed at the side of the main compartment for supporting the charge on a stick or pole. The main compartment is sealed along both sides and across one end and is closed by a flat lying valve element integral with one of the main side walls but sealed to the other main side wall across part only of its width and along a line spaced from the end of the valve element. A filler opening is thus provided at one or both sides of this cross-seal.

3,783,788

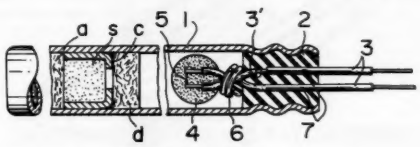
ELECTRIC DETONATOR FREE FROM ACCIDENTAL ELECTROSTATIC FIRING

Keizo Hayashi, Tokyo, Japan, assignor to Nippon Oils and Fats Company Limited, Tokyo, Japan

Filed Oct. 7, 1971, Ser. No. 187,459

Int. Cl. F42b *3/18*

U.S. Cl. 102—28 R **14 Claims**



An electric detonator carrying a fuse head disposed in a tube and being fired by an electric current delivered through a pair of legs carried by a plug fitted at an open mouth of the tube. The plug is made of a moldable sealing material having a comparatively low electric resistance, and at least one of the legs is electrically connected to the plug, so as to allow the grounding of the tube through the plug and the leg.

3,783,789

BLASTING OPERATIONS

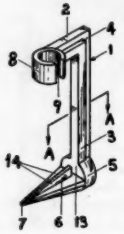
Nathaniel G. Rose, 12 Terrace Rd. Mountainview, Johannesburg, South Africa

Filed Mar. 14, 1972, Ser. No. 234,564

Claims priority, application South Africa, Mar. 15, 1971, 71/1675

Int. Cl. F42b *3/10*

U.S. Cl. 102—28 A 13 Claims



This invention relates to a device for maintaining a detonator and its associated firing connection in position relative to an explosive charge while the latter is inserted into a previously prepared hole during blasting operations. The device comprises an elongated member divided into two arms by a generally right-angled bend, the free end of one arm having a spike extending substantially parallel to the other arm which has at its free end a clip adapted to frictionally engage a fuse or detonating wire extending roughly parallel to said first arm, said arms being flexible but substantially non-deformable.

3,783,790

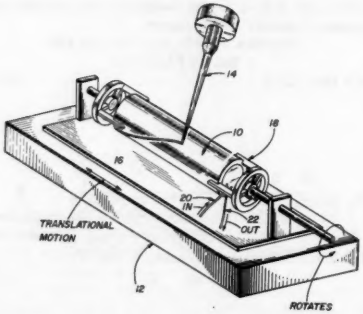
CONTROLLED FRAGMENTATION WARHEAD

Raymond J. Polcha, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 145,977, May 21, 1971. This application Feb. 2, 1973, Ser. No. 329,242

Int. Cl. F42b *13/48*

U.S. Cl. 102—67 3 Claims



A method of producing fragmenting warheads that permits selecting sizes and numbers of fragments desired while allowing for assembly line production. The sizes and shapes of desired fragments are traced onto the outside of an explosive case by an electron beam welder. The electron beam creates a thin molten zone along its path of travel. Upon fast cooling of the molten zones by circulating a liquid coolant inside the case, a very hard and brittle martensite structure is created along the path of beam travel. When detonated, the explosive case will fragment along the brittle martensite zones created.

3,783,791

SWITCH FOR ELECTRICAL IMPACT DETONATORS

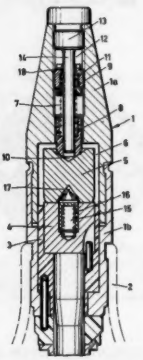
Gunter Backstein, and Lothar Petzsch, both of Meerbusch-Langst, Germany, assignors to Rheinmetall GmbH, Dusseldorf, Germany

Filed Oct. 13, 1971, Ser. No. 188,953

Claims priority, application Germany, Nov. 7, 1970, P 20 54 839.4

Int. Cl. H01h *35/14*

U.S. Cl. 102—70.2 R 8 Claims



A switch for electrical impact detonators, which comprises an inertial mass effective as a contact member. A housing forms a complementary contact and surrounds the contact member for axial and tiltable movement therein. A spring acts in a direction against the firing direction and retaining the contact member in resting position, and the contact member has the greatest possible mass relative to the external dimensions of the housing.

3,783,792

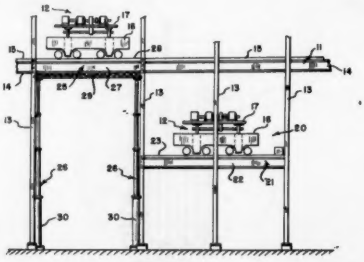
REPAIR FACILITY FOR OVERHEAD CRANE

John T. Cullom, 628 6th Ave., San Manuel, Ariz.

Filed Jan. 20, 1972, Ser. No. 219,217

Int. Cl. B61b *3/00*

U.S. Cl. 104—128 7 Claims



An overhead crane arrangement that includes an overhead railway and at least one traveling crane riding on the rails of the railway is provided with a crane repair bay located directly below the overhead railway and with a vertically movable crane elevator section of the overhead railway that is adapted

to receive and transport the traveling crane from the level of the overhead railway to the level of a railway spur located in the crane repair bay. Lift means are provided for moving the crane elevator section from the level of the overhead railway to the level of the repair bay railway spur and return.

3,783,793

TRACK SYSTEM HAVING NON-LOAD BEARING TRACK SWITCH

Francis Cyril Perrott, The Manor House, S. Cerney, Cirencester, and Ian Miller Edington Aitken, London, England, assignors to said Perrott, by said Aitken

Filed Mar. 22, 1971, Ser. No. 126,556

Int. Cl. E01b *7/00, 26/00*

U.S. Cl. 104—130 **3 Claims**

The means of transportation include tracked vehicles, are especially applicable to railways and provide improvements relating particularly to the routing of vehicles at track branches. The means comprise a vehicle and two pairs of support tracks which define alternative routes for the vehicle at a branch, with one track of each pair not meeting the corresponding track of the other pair. The tracks continuously support the vehicle while passing over the branch, and guidance means are operative at and immediately before the branch to align the vehicle with respect to either one of the pairs of tracks whereby to select the corresponding route for the vehicle without relative movement of the support tracks.

3,783,794

MAGNETIC SUSPENSION SYSTEM FOR VEHICLES AND THE LIKE WITH NON CONTROLLED SUSPENDING MAGNETS

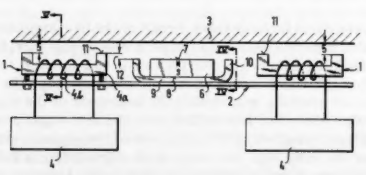
Max Gopfert, and Rudolf Gebhardt, both of Munich, Germany, assignors to Krauss-Maffei AG, Munich, Germany

Filed July 24, 1972, Ser. No. 274,454

Claims priority, application Germany, July 28, 1971, P 21 37 691.0

Int. Cl. B61b *13/08*

U.S. Cl. 104—148 MS **10 Claims**



A magnetic-suspension system for vehicles and the like adapted to travel along a track provided with a fixed armature rail of magnetically permeable—ferromagnetic—material. The suspended vehicle comprises, on a portion of the vehicle confronting the rail and therebelow, controlled electromagnets which regulate the suspension force and, adjacent the controlled electromagnets and preferably alternating therewith, uncontrolled suspending magnets which provide a substantial proportion of the suspension force.

3,783,795

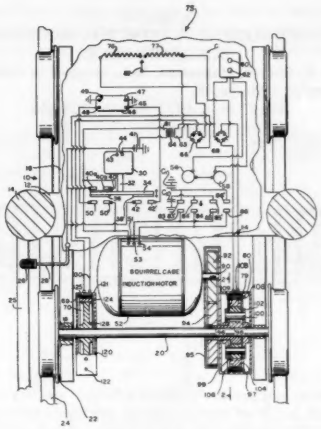
PROPULSION SYSTEMS USING SQUIRREL CAGE INDUCTION MOTORS TO OPERATE FROM AN AC OR DC SOURCE

Robert Helmer, 19 Cornwallis Rd., Setauket, N.Y.

Filed June 19, 1972, Ser. No. 264,144

Int. Cl. B61c *9/48;* **B50l** *9/16*

U.S. Cl. 105—61 **15 Claims**



A mechanical load is coupled to an AC drive motor via a planetary gear transmission controlled by a magnetic torque convertor such that speed of the load is variable while speed of the motor is constant. A magnetic coercive force clutch is arranged to brake the load while the motor runs continuously. The system may be energized by alternating or direct current. A DC to AC inverter provides alternating current to run the AC motor when direct current is supplied to the system. The converter and clutch are supplied with direct current via rectifiers connected to a transformer energized by alternating current. Alternatively, the transformer is energized by alternating current which may be supplied by the inverter.

3,783,796

LATERALLY SHIFTABLE RAILWAY CAR SPRING SUSPENSION

Ernst Florian Kreissig, Seuzach, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed June 15, 1971, Ser. No. 153,239

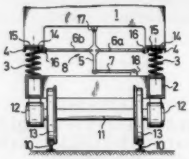
Claims priority, application Switzerland, June 17, 1970, 9155/70

Int. Cl. B61f *3/00, 5/14, 5/20*

U.S. Cl. 105—199 R **10 Claims**

The spring-like supporting elements are connected at one end to either the body or the bogie while a deflecting element

is connected to the other end of each supporting element. The lever serves to reduce the lateral movement of the deflecting elements in proportion to the lengths of the sub-divided lever



arm. Thus, the supporting elements are subjected to only a fraction of the total displacement between the body and the bogie.

3,783,797

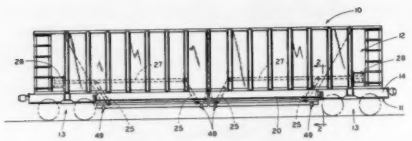
HOOPER DOOR ACTUATING MECHANISM AND AUXILIARY LOCK

William R. Shaver, Hammond, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Feb. 4, 1972, Ser. No. 223,424

Int. Cl. B61d *7/02, 7/18, 7/28*

U.S. Cl. 105—251 **4 Claims**



A railway hopper car includes a hopper construction provided with a pair of motor actuated discharge gates pivotally supported for swinging movement from a closed position of V-shaped configuration to a spread apart gravity discharge position. In the closed position lower terminal edges of the gates respectively overlap and are moved to and retained in this position by a power actuated linkage arrangement. An auxiliary lock or latch is provided which includes a keeper pivotally connected to one of the doors and includes finges and supporting surfaces disposed in V-shaped relation and in the closed position of the doors support and lock the terminal edges against the possibility of accidental opening.

3,783,798

RAILROAD CAR FOR HAULING FLAT STACKS OF MATERIAL

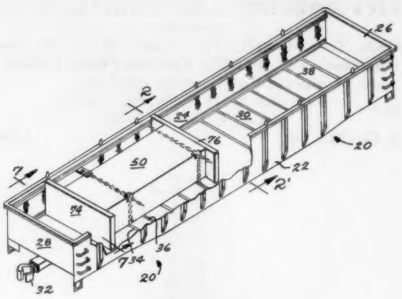
Frank Gordon Christian, Jr., Huntington, W. Va., assignor to The Chesapeake and Ohio Railway Company, Cleveland, Ohio and The Baltimore and Ohio Railroad Company, Baltimore, Md.

Filed Dec. 15, 1971, Ser. No. 208,224

Int. Cl. B60p *7/08*; **B61d** *45/00*

U.S. Cl. 105—369 A **2 Claims**

A railroad car for hauling stacked, flat sheets of material, such as rectangular cut sheet steel, and a method of securing such a stack in a railroad car having a plurality of sunken chain troughs extending in the bed of the car from one side to the other with a chain holding member or saddle mounted in each trough, and a plurality of chain holding devices, each attached to one side of the car roughly above the intersection of a trough with that side. To secure the load, a first chain portion passes along in each of one or more troughs beneath the load to the side of the stack adjacent one side of the car, passes up that side of the stack and over the top of the stack to attach to the opposite side of the car, while another chain portion passes in that same chain trough in the opposite direction to the side of the stack adjacent that opposite car side, up that side of the stack and over the top of the stack to attach to the



first car side. A plurality of bulkheads each extending from one side of the car to the other and movable along the length of the car in a pair of tracks which each extend along one car side are also preferably provided for securing the stack against movement in a direction parallel to the car sides.

3,783,799

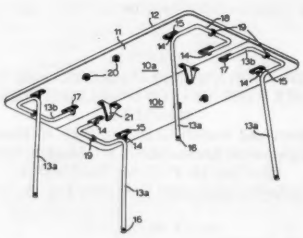
FOLDING TWO-LEVEL TABLE, BENCH OR THE LIKE

Emanuel F. Dupuis, 12 Parkview Rd., St. Catharines, Ontario, Canada

Continuation-in-part of Ser. No. 106,821, Jan. 15, 1971, abandoned. This application Mar. 9, 1972, Ser. No. 233,035

Int. Cl. A47b *3/08, 9/18*

U.S. Cl. 108—19 **2 Claims**



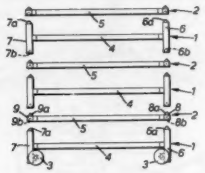
A two-level foldable table, bench or the like comprises a top divided into two parts with the parts hinged together. Four individual leg assemblies are provided, two to each top part, each of which has one long leg and one short leg. The assemblies are pivotally mounted to the underside of the top at the junction of the two legs, so that with the short legs vertical the long legs extend along the underside of the top, and vice versa when the long legs are vertical, thus providing a fully supported top at two different selected levels. Catches are provided to hold the legs in their selected positions. When the top is folded the short legs engage each other so that the table etc. forms a compact, solid package suitable for storage and/or carrying.

3,783,800

DRYING TROLLEYS FOR BRICKS AND OTHER ARTICLES

Franz Bucker, Laggenbeck, Germany, assignor to C. Keller U. Co., Laggenbeck, Germany

Filed Feb. 10, 1972, Ser. No. 225,170
Claims priority, application Germany, Nov. 23, 1971, P 21 57 996.4
Int. Cl. B65d *19/38*
U.S. Cl. 108—53 3 Claims



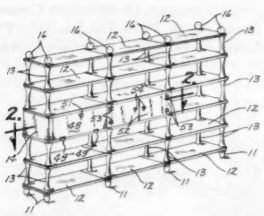
A trolley for drying bricks in a drier comprises a demountable stack of pallets. The stack comprises first and second sets of pallets alternately arranged. When the pallets of the two sets are arranged in the same configuration, adjacent pallets are spaced apart by equal distances, and when the pallets of the two sets are arranged in different configurations, each pallet o the second set rests on the frame of an adjacent lower pallet of the first set. In this manner, the distance between adjacent tier of pallets is increased.

3,783,801

ARTICLE OF FURNITURE

Gerald Engman, Des Moines, Iowa, assignor to Emco Industries, Inc., Des Moines, Iowa

Filed June 1, 1972, Ser. No. 258,732
Int. Cl. A47b *57/00*
U.S. Cl. 108—60 2 Claims



An article of furniture comprised of a number of individually available pieces which may be assembled in any fashion by the purchaser, then disassembled and reassembled as a different article of furniture, and which includes a side wall unit having one or more vertical grooves therein for combination with a rear wall, and being connectable with other elements by a single male-dual female connecting unit.

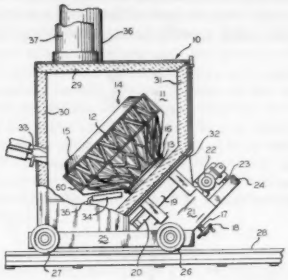
3,783,802

GRATE STRUCTURE FOR INCINERATOR

Donald J. Schrage, Germantown, Wis., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Filed Apr. 26, 1972, Ser. No. 247,579
Int. Cl. F23g *5/06*
U.S. Cl. 110—14 14 Claims

In a hollow pyrometric incinerator grate structure are groups of axially spaced grate support means such as rings. Elongated grate bars are disposed on the support means circumferentially in rows about the interior of the hollow body.



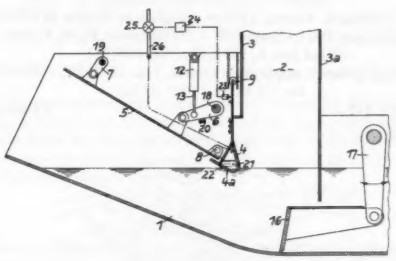
Each grate bar is engaged at its center with an intermediate support and the opposite ends of each grate bar bear freely on opposite axially spaced supports to enable biaxial stress relief.

3,783,803

FURNACE CONSTRUCTION

Johannes Josef Martin; Walter Josef Martin, and Frich Weber, all of Munich, Germany, assignors to Josef Martin Feuerungsbau GmbH, Munich, Germany

Filed June 8, 1972, Ser. No. 260,783
Claims priority, application Germany, June 11, 1971, P 21 28 998.5
Int. Cl. F23j *1/02*
U.S. Cl. 110—165 R 10 Claims



A horizontal trough accommodates a body of water and has two transversely spaced lateral sides one of which is provided with an edge. A substantially vertical discharge chute has an upper endportion into which slag and other combustion residue from a furnace is permitted to enter and a lower endportion with an outlet through which the residue enters into the trough. The lower endportion is bounded by two transversely spaced walls one of which is closer to the first edge and the other of which is closer to the second edge of the trough, with the other wall being vertically movable with reference to the stationary upper portion of the chute. A pusher pushes residue out of the trough, beneath the vertically movable wall and over the free edge of the trough.

3,783,804

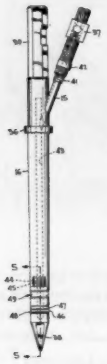
SUB-SURFACE ROOT FERTILIZER AND PROBE

Edward A. Platz, Opossum Rd., Bellemead, N.J.

Filed Apr. 21, 1972, Ser. No. 245,959
Int. Cl. A01c *23/02*
U.S. Cl. 111—7.4 11 Claims

A sub-surface root fertilization apparatus for use in injecting the soil with a concentrated liquid fertilizer comprising a

frame, a portion of the frame adapted to receive at least one tank, at least one tank within this portion, a pump mounted on the frame having an inlet and an outlet, a tube communicating one of the tanks with the input of the pump, control means for operating the pump, a probe having a mounting chuck at one



end, a fluid passage within the probe, the fluid passage terminating in a nozzle means at the end of the probe opposite the mounting chuck, a tube mounted on the probe communicating the probe with the outlet of the pump and an impact hammer attached to the mounting chuck of the probe.

3,783,805

DEVICE FOR TURNING-IN THE BORDER OF PIECES MADE OF FLEXIBLE SHEETS

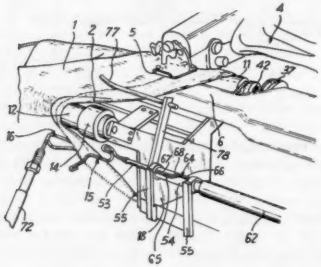
Jean Guichard, Yerres, France, assignor to Centre D'Etudes Techniques Des Industries De L'Habillement, Paris, France

Filed Jan. 6, 1972, Ser. No. 215,787

Claims priority, application France, Jan. 11, 1971, 7100607

Int. Cl. D05b *27/00, 35/02*

U.S. Cl. 112—2 **5 Claims**



Device for turning-in the border of pieces made of flexible sheets comprising : means for supporting the piece in such a way that its marginal portion that is to be turned-in finds itself, at least partially, in a predetermined reference plane ; a lateral guide for positioning the border of the said marginal portion ; means for causing the border of the marginal piece portion which finds itself in the said reference plane to advance longitudinally, against the said lateral positioning guide ; a stop whose position, in relation to the lateral guide, determines the width of the turning-in that is to be formed ; a turning mobile member ensuring the formation of the turning-in in cooperation with the said stop ; control means for the turning-in member ; and means for introducing the turned-in marginal portion of the piece into the entry of the machine for fixing the turning-in.

3,783,806

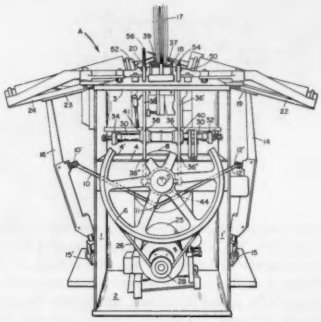
STITCH SPACER FOR BROOM STITCHING MACHINE

Edmund McCaffray, Jr., 2800 Sisson St., Baltimore, Md.

Filed Sept. 18, 1972, Ser. No. 289,873

Int. Cl. D05b *23/00*

U.S. Cl. 112—6 **5 Claims**



A broom stitching machine having a movable vise assembly including movable jaws for clamping the broom in sewing position wherein reciprocating needles move through the broom straws at substantially 70° to 80° to the plane of the vise jaws for binding the strands together, including improved means for moving the broom vise a predetermined distance between each stitch by providing an intermittent rotating shaft to which the movable vise assembly is connected including means for adjusting the amount of the shaft rotation for regulating the length of the stitch.

3,783,807

WORK CLAMP MECHANISM FOR SEWING MACHINES

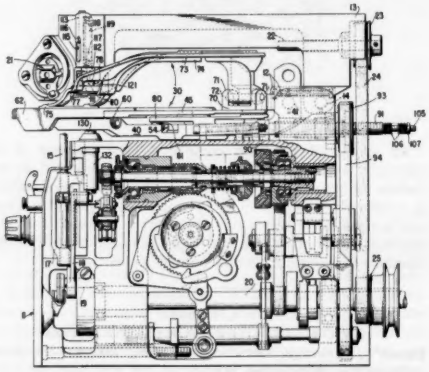
Gunter Tolle, Wendelinusstr. 15, Bruchsal, Germany

Filed Feb. 16, 1973, Ser. No. 333,079

Claims priority, application Germany, May 6, 1972, P 22 22 294.2

Int. Cl. D05b *3/04*

U.S. Cl. 112—76 **8 Claims**



A work holding clamp for a cyclic sewing machine in which the stitch forming instrumentalities are organized with the loop taker arranged above the work and the needle therebeneath. The loop taker supporting bracket arm can be

raised and lowered and a spacing member is provided between the loop taker supporting bracket arm and the upper jaw of the work clamp to provide uniform spacing between the work and the loop taker during sewing despite work thickness variation. The work clamp is also pivoted to the machine frame and articulated with respect to the work feeding mechanism so that the entire work clamp may be swung up to provide access to the needle.

3,783,808

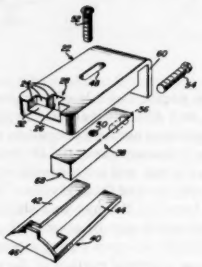
HOLDER FOR SHANK BUTTON

Daniel V. Miscevic, Miami, Fla., assignor to Martin D. Gopman, Miami, Fla., a part interest

Filed Sept. 29, 1972, Ser. No. 295,988

Int. Cl. D05b *3/00*

U.S. Cl. 112—114 **10 Claims**



A holder for articles such as shank buttons and the like to be attached to a material such as a fabric has a body member provided with walls defining a recess. This recess is arranged for receiving an article, and cooperates with a needle of an associated sewing machine for sewing the button to a material arranged between the recess and needle, such that the button is sewed to the underside of the material. A block member and a holding member are combined with the body member to form a holder which is adjustable for different size buttons and the like.

3,783,809

APPARATUS FOR PRODUCING STITCHING PATTERNS WITH SEWING MACHINE REMOVING MEANS

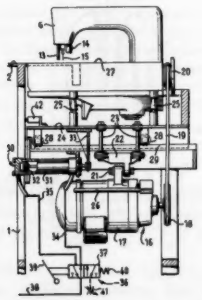
Nerino Marforio, Milan, Italy, assignor to S.p.A. Virginio Rimoldi & C., Milan, Italy

Filed May 17, 1972, Ser. No. 253,965

Claims priority, application Italy, June 18, 1971, 26013 A/71

Int. Cl. D05b *75/00*

U.S. Cl. 112—121.14 **5 Claims**



This invention relates to an apparatus for producing stitching patterns on fabric workpieces in which a sewing machine is mounted with its working face in the same plane as the supporting face of a table on which the fabric to be stitched is located. The sewing machine is contained or mounted on a frame in such a way that it can be moved laterally with respect to the surface of the table from an inner position where it can cooperate with the surface of the supporting table and an outer position where it is located or positioned completely outside of the confines of the supporting structure. The movement of the sewing machine between one position and the other can be effected by any suitable means such as hydraulic or pneumatic cylinders or by reversible electric motor if desired. Also included is a safety inner lock system that prevents the sewing machine from becoming automatically operated when it is located in a position outside the supporting frame.

3,783,810

LOOPER DRIVING DEVICE WITH PERIODICALLY VARIABLE SPEED IN ZIG-ZAG CHAINSTITCH SEWING MACHINES

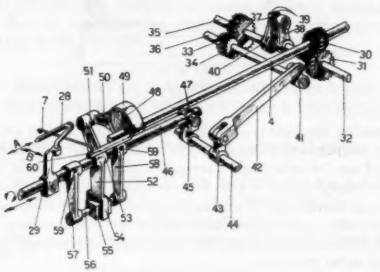
Nerino Marforio, Milan, Italy, assignor to S.p.A. Virginio Rimoldi & C., Milan, Italy

Filed Nov. 9, 1971, Ser. No. 196,974

Claims priority, application Italy, Nov. 18, 1970, 31873 A/70

Int. Cl. D05b *3/02, 1/06*

U.S. Cl. 112—159 **7 Claims**



The invention relates to an improved means for driving the looper device of a sewing machine of the type which sews a chain-stitch in a zig-zag pattern. According to the invention, the looper is oscillated respectively at different speeds in mutually perpendicular directions.

3,783,811

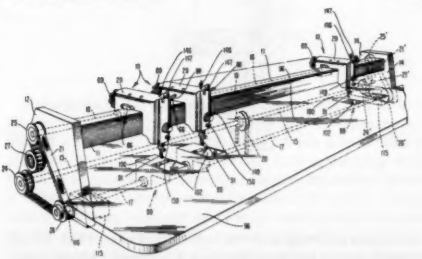
SEWING MACHINE

Albert A. Schmedding, and Ernest L. Pfeifer, both of Oradell, N.J., assignors to Bergenfield Development Co., Inc., Dumont, N.J.

Division of Ser. No. 720,632, April 11, 1968, Pat. No. 3,595,188. This application Aug. 20, 1970, Ser. No. 65,672

Int. Cl. B65h *59/26*

U.S. Cl. 112—218 R **9 Claims**



Sewing machine, here illustrated as a machine for simultaneously embroidering a plurality of pieces of goods with an

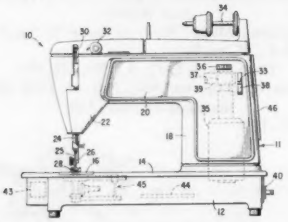
identical pattern or for embroidering a plurality of identical patterns on a single piece of goods. The illustrative machine comprises a plurality of embroidering stations, a plurality of embroidering mechanisms each of which is disposed at a respective embroidering station, and means for traversing the goods relative to the mechanisms at the stations to embroider the goods in accordance with the pattern.

3,783,812

SEWING MACHINE WITH A PRINTED CIRCUIT SWITCH AND VARIABLE SPEED CONTROL MEANS

Harry Fersch, Lakewood, and Walter Heinz Kopido, Rockaway, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Nov. 24, 1972, Ser. No. 309,318
Int. Cl. D05b *69/14*
U.S. Cl. 112—220 **9 Claims**



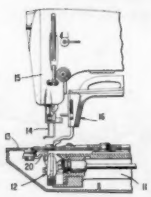
A sewing machine is provided with a printed circuit switch and a cooperating control means whereby the mechanisms thereof can be selectively operated with variable speed in a forward direction or in a reverse direction such that the conventional handwheel of a sewing machine can be eliminated. Additionally, a sewing machine may be operated without the use of the conventional operator-actuated foot controller connected to the machine.

3,783,813

UNDERBED THREAD TRIMMING DEVICE FOR SEWING MACHINES

Gunter Kroll, Munich, Germany, assignor to The Singer Company, New York, N.Y.

Filed Aug. 14, 1972, Ser. No. 280,701
Int. Cl. D05b *65/00*
U.S. Cl. 112—252 **1 Claim**



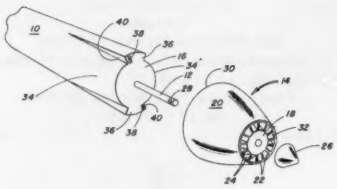
A device for severing both the bobbin and needle threads of a lockstitch sewing machine in which a movable cutting blade is carried beneath the sewing machine throat plate for cooperation with a ledger blade formed on the bottom surface of a throat plate insert having a needle aperture formed therein.

3,783,814

THRUST AUGMENTING EXPANSION ENGINE

Carl T. Zovko, 302 Penwood Rd., Silver Spring, Md.

Filed Jan. 23, 1968, Ser. No. 701,813
Int. Cl. F42b *19/12, 19/18, 19/22*
U.S. Cl. 114—20 A **26 Claims**



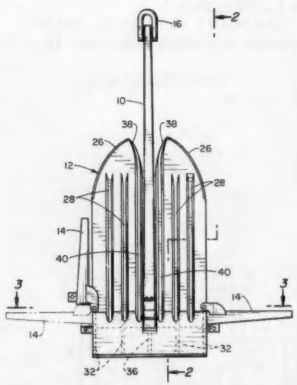
An expansion engine capable of extracting energy from an expanding gas and distributing that energy between the gas and a fluid stream to generate a propulson or power force. The engine includes a thrustor mounted for rotation about a shaft and consisting of a hub and a concentric shroud connected by a number of evenly spaced, helical vanes. The vanes divide the annular space between the hub and shroud into equal sized helical channels which are open at both ends. The forward ends of the channels are open during a portion of the rotation and closed during a second portion of the rotation. The channels are filled with fluid when in the unobstructed position, and an expandable gas is delivered behind each slug of fluid in the channel when in the obstructed position. The high pressure gas accelerates the already moving water to the rear of each channel.

3,783,815

HEAVY DUTY MARINE ANCHOR

Richard C. Towne, 822 W. Roderick Ave., and Johnnie V. Stalcup, 3121 Paula St., both of Oxnard, Calif.

Filed Jan. 24, 1972, Ser. No. 220,148
Int. Cl. B63b *21/26*
U.S. Cl. 114—208 R **4 Claims**



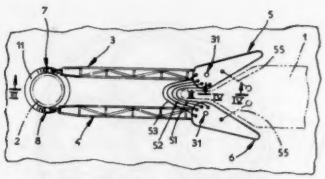
A large cast low cost anchor construction of high holding power to weight ratio. Specially shaped fluke stiffening ribs permit relatively thin flat flukes in massive anchors and a new aspect ratio of fluke length to shank length in excess of 0.600.

3,783,816

SYSTEM FOR MOORING SHIPS TO STRUCTURES

Christain de Chassy, Vauhallan, and Andre Capdeboscq, Jurancon, both of France, assignors to Entreprise de Recherches Et D'Activites Petrolieres (Elf), Paris, France

Filed Apr. 12, 1972, Ser. No. 243,293
Claims priority, application France, Apr. 16, 1971, 7113441
Int. Cl. B63b *21/00*
U.S. Cl. 114—230 10 Claims



This invention concerns a system for mooring ships to structures consisting of two rigid arms (3 and 4), jointed at one end to two diametrically opposite points (7 and 8) on a crown-wheel, which can revolve on the mooring structure (2), and at the other end, by means of universal joints (31 and 32), to two floating caissons (5 and 6); these are connected by flexible couplings (51, 52 and 53), and the stem-post of the ship (1) passes between them.

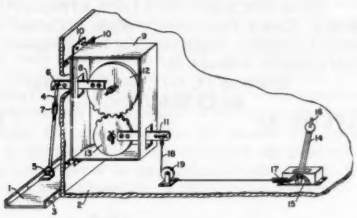
The invention concerns the mooring of oil-tankers or other vessels, floating appliances, etc.

3,783,817

MECHANICAL TRIM TAB MEANS FOR MARINE CRAFT

Philip M. Banner, 28 Oxford Rd., Massapequa, N.Y.

Continuation-in-part of Ser. No. 16,476, March 14, 1970, Pat. No. 3,628,484. This application Dec. 6, 1971, Ser. No. 204,996
Int. Cl. B63b *1/18*
U.S. Cl. 114—66.5 P 6 Claims



A pair of trim tabs are pivotally connected to the transom of a power boat adjacent to the water line. The angle of the trim tabs is adjusted to desired operating positions by a hand operated lever and cable assembly attached to leverage arms and gears adjustable for mechanical power means. The leverage arms are adjustable for lesser or greater leverage power to the trim tabs.

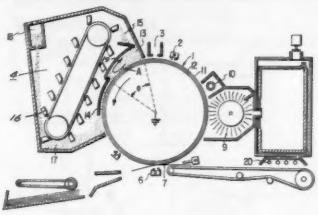
3,783,818

ELECTROPHOTOGRAPHIC DEVELOPING PROCESS

Katsuo Makino, Odawara; Seiji Joh, and Kouzou Takeda, both of Tokyo, all of Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1971, Ser. No. 211,577
Claims priority, application Japan, Dec. 26, 1970, 45-119046
Int. Cl. G03g *13/08*
U.S. Cl. 118—4 6 Claims

An electrophotographic cascade developing process and apparatus for rendering an electrostatic latent image visible which comprises (1) providing a developing electrode in the proximity of a surface holding the electrostatic latent image to be developed thereon and in facing relationship to the surface; (2) moving the surface with respect to the electrode; (3) developing the latent image by flowing cascade developer including charged toner particles and carrier particles between the surface and the electrode while applying to the electrode a



first electric potential of a polarity capable of attracting the toner particles; and (4) after the portion of the surface containing the developed image is moved past the space under the influence of the electrode, changing the first potential on the electrode to a second potential which attracts said charged toner particles less than the first potential while maintaining the flow of developer to thereby remove toner particles sticking on the electrode.

3,783,819

MOVEMENT OF A WORKING STATION WITH REFERENCE TO A SUBSTANTIALLY VERTICAL SURFACE

Paul Hammelmann, Zum Sundern 17, Oelde/Westfalen, Germany

Division of Ser. No. 803,126, Feb. 26, 1969, Pat. No. 3,623,902.
This application Nov. 12, 1970, Ser. No. 88,722
Nov. 12, 1970, Ser. No. 88,722
Claims priority, application Germany, Feb. 28, 1968, P 15 56 454.2
Int. Cl. B08b *3/02*; B05c *5/00*
U.S. Cl. 118—4 19 Claims

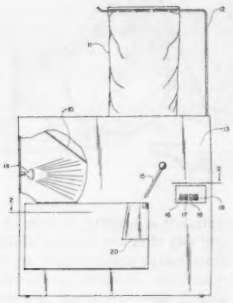
Arrangement for moving a working station with reference to a substantially vertical surface, particularly the external surface of a ship hull. A vehicle is advanced in a horizontal path adjacent to and along the surface and a working station, movably supported on the vehicle, is simultaneously moved in a substantially vertical path with reference to the travelling vehicle between an upper and a lower end position whereby it moves along a substantially vertical strip of the surface. On reaching one or the other of its end positions, the working station is rapidly shifted in the direction of advancement of the vehicle and thereupon again moved in a substantially vertical path with reference to the travelling vehicle along another substantially vertical strip of the surface which is directly adjacent to but does not overlap over the first vertical strip.

3,783,820

POPCORN FLAVORING AND DISPENSING APPARATUS

Harry B. Hautly, Kirkwood, and Samuel T. Echols, Jr., Bismarck, both of Mo., assignors to Buttermist, Inc., Bismarck, Mo.

Filed Apr. 3, 1972, Ser. No. 240,592
Int. Cl. A23g 3/26
U.S. Cl. 118—19 10 Claims



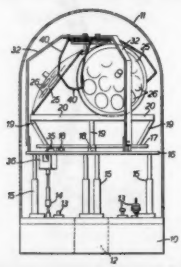
A popcorn flavoring and dispensing apparatus, comprising a hopper for popped popcorn, an opening in the bottom of the hopper, a valve in the opening to control dispensing of popcorn through the opening, and a spray nozzle closely adjacent the opening to spray liquid butter or other flavoring uniformly and positively onto the popped popcorn as it is dispensed through the opening.

3,783,821

PLANETARY WORKHOLDERS

Christopher D. Dobson, 44 Fields Park Rd., and Kenneth Nash Knight Willmott, 158 Linden Ct., both of Newbridge, England

Filed July 20, 1971, Ser. No. 164,336
Claims priority, application Great Britain, Mar. 2, 1971, 5745/71; June 14, 1971, 27788/71
Int. Cl. C23c 11/08
U.S. Cl. 118—48 16 Claims



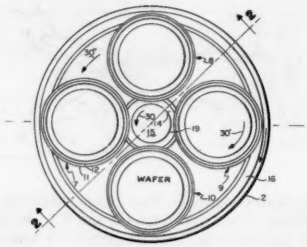
A movable workholder in a vacuum enclosure, for vacuum deposition, including a planetary system comprising a number of planet workholders engaging a horizontal driving annulus at their lower edges and resting on a sun wheel at their upper edges, the planets being held apart by a rotary spider. The angular inclination of the planets can be adjusted by locating them selectively on one of two spaced sun wheels, or by tilting one of the sun wheels so that the planets tilt as they rotate. The apparatus may include means for rotating sections of the planets to expose the opposite sides of the workpieces, and each planet may incorporate a subsidiary planetary system.

3,783,822

APPARATUS FOR USE IN DEPOSITION OF FILMS FROM A VAPOR PHASE

John S. Wollam, 53 Atcott St., Acton, Mass.

Filed May 10, 1972, Ser. No. 251,931
Int. Cl. C23c 13/08
U.S. Cl. 118—49.1 9 Claims



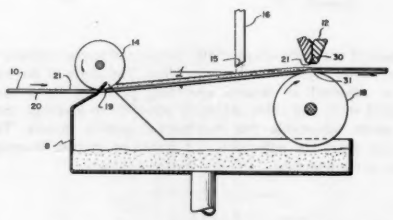
Separate platform discs for carrying workpieces or substrates such as slices or wafers of semiconductor material in a deposition environment are moved in a common circular orbit and rotated by the action of two co-axial annular support surfaces upon which each disc rests at opposite areas of the lower periphery of the disc, one of these support surfaces being driven with respect to the other in rotation about the axis common to the two annular supports. The temperature of the discs and/or substrates is maintained by proximity to a heat or other energy source or sink, with deposition occurring on the exposed upper surface of the substrate resting on the disc.

3,783,823

FILM THICKNESS CONTROL APPARATUS

William C. Sievert, Chesterton; William A. Carter, Gary, and James L. Munson, Highland, all of Ind., assignors to Inland Steel Company, Chicago, Ill.

Filed May 13, 1971, Ser. No. 142,927
Int. Cl. B05c 11/06, 5/00
U.S. Cl. 118—63 10 Claims



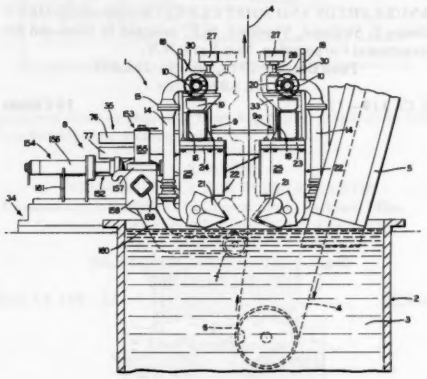
A coating system for a continuous strip comprising a roller means station and an air knife station spaced from and vertically above the roller means station with a fluid depositing means located between the roller means station and air knife station.

3,783,824

ELEVATOR CONSTRUCTION FOR COATING CONTROL EQUIPMENT

John B. Kohler, North Canton, and David H. Croston, Navarre, both of Ohio, assignors to The Kohler Coating Machinery Corporation, Greentown, Ohio

Filed May 30, 1972, Ser. No. 258,063
Int. Cl. B05c *11/06*
U.S. Cl. 118—63 **24 Claims**



An elevator construction for holding and positioning jet nozzle coating control equipment with respect to a vertically extending strip of coated metal. A horizontal platform is supported by two pairs of parallel support links above a fixed base. The support links, base and platform are arranged in a parallelogram or pantographic configuration. A pair of control links, one half the length of the support links, are pivotally attached at the midpoints of the pair of the support links and to the base. A frame is slidably mounted within the base and the lower ends of the support links are pivotally attached thereto, whereby straight-line horizontal movement of the frame within the base imparts a straight-line vertical motion to the platform through the movement of the support and control links. Blocks for supporting the jet nozzles are slidably mounted in horizontal slideways formed in the platform for horizontal movement of the jet nozzles towards and away from the coated strip, independent of the vertical position of the platform.

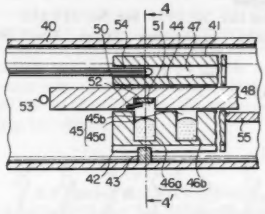
3,783,825

APPARATUS FOR THE LIQUID-PHASE EPITAXIAL GROWTH OF MULTI-LAYER WAFERS

Hiroyuki Kobayasi, and Isamu Akasaki, both of Osaka, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Mar. 1, 1972, Ser. No. 230,661
Claims priority, application Japan, Mar. 5, 1971, 46/12067
Int. Cl. B05c *3/00*; B01d *9/00*
U.S. Cl. 118—422 **1 Claim**

An apparatus for the liquid-phase epitaxial growth of multi-layer wafer comprising a refractory furnace tube, a boat placed in the furnace tube and having a plurality of bathes which are aligned in the longitudinal direction of the furnace tube and respectively carry solutions each containing semiconductive substances, and a holding member for holding a substrate which is arranged to succeedingly flood the substrate with the solutions so as to epitaxially grow a multi-layer wafer on the substrate. The holding member arranged to upset the substrate upon picking-up or separating of the substrate from the solution so that the solution remained on the substrate is dropped from the substrate whereby unwanted mixing of the solutions neighbouring each other can be avoided.

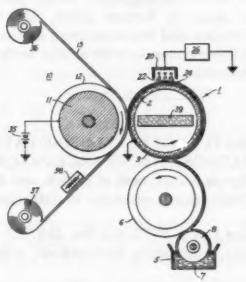


3,783,826

ION FILM REGULATING DEVICE

Edwin A. Urbanek, Penfield, and Richard C. Vock, Ontario, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Aug. 20, 1971, Ser. No. 173,583
Int. Cl. G03g *13/00*; B05c *5/00*
U.S. Cl. 118—620 **1 Claim**



Apparatus for regulating liquid film thickness are provided. The apparatus provided by the present invention comprises:

an elongated corona discharge electrode;

a corona generating potential source connected to said discharge electrode adapted to apply a corona generating potential between said discharge electrode and a ground electrode;

means adapted to overcoat a surface with a non-conductive liquid film; and

means adapted to establish relative motion between said discharge electrode and the overcoated surface in close spaced relation to said discharge electrode, whereby said discharge electrode creates an ion curtain extending across the path of relative movement of the surface and the discharge electrode which impinges upon said non-conductive liquid film, and, upon relative movement of said surface and said discharge electrode, wipes at least the portion of said film from said surface.

3,783,827
LIQUID DEVELOPMENT APPARATUS FOR ELECTROPHOTOGRAPHY

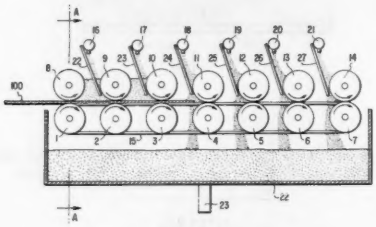
Osamu Fukushima; Masamichi Sato, and Satoru Honjo, all of Asaka-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 30, 1971, Ser. No. 214,252

Claims priority, application Japan, Dec. 30, 1970, 45/122799

Int. Cl. G03g *13/10*

U.S. Cl. 118—637 **2 Claims**



An electrophotographic developing apparatus comprising: multiple carrier rollers, held in supporting means, conveying an electrophotographic sheet material to be processed and driven at a common speed by driving means; two endless belts hung at the side ends of said carrier rollers to form a loop including at least some of said carrier rollers; multiple development electrodes arranged facing to carrier rollers; and a means of supplying liquid developer onto the electrophotographic sheet which is conveyed between said carrier rollers and said development electrodes, whereby a developer pool is formed on the electrophotographic sheet, said pool being limited by the sheet as bottom plane, and the adjacent developing electrodes and the supporting means as side borders, said sheet being conveyed with its rear surface in contact with said endless belts.

3,783,828
APPARATUS FOR DEVELOPING LATENT ELECTROSTATIC CHARGE IMAGES

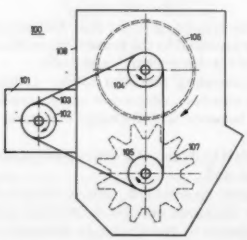
Gabor Forgo; Erwin Meyer, both of Zurich, and Josef Schilter, Ruti, all of Switzerland, assignors to Zellweger AG, Uster, Switzerland

Filed July 3, 1972, Ser. No. 268,783

Claims priority, application Switzerland, Aug. 16, 1971, 12106/71

Int. Cl. G03g *13/08*

U.S. Cl. 118—637 **9 Claims**



An apparatus for developing latent electrostatic charge images by means of a magnetic brush wherein there is provided a rotatably mounted scoop or bucket wheel formed of insulating material and serving for dispensing a mixture of magnetic and toner particles. Above the scoop wheel there is arranged a rotatably mounted drum formed of non-magnetic material and within which there is provided a stationary magnet system with a core of soft magnetic material and prismatic permanent magnets arranged about such core. The magnets starting from the lowest location of the internal compartment of the drum and within the ascending drum wall possess alternating polarity and at least two successive permanent magnets at the upper portion of the inner compartment of the drum have the same polarity.

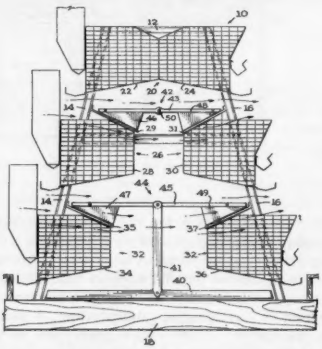
3,783,829
MANURE SHEDS AND JOIST CLEANER ARRANGEMENT

Anthony J. Siciliano, Vineland, N.J., assignor to Diamond International Corporation, New York, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,407

Int. Cl. A01k *31/04*

U.S. Cl. 119—17 **18 Claims**



A cage-row battery arrangement for raising poultry comprising vertically spaced batteries of pairs of cage rows with the cage rows of batteries at intermediate and lower levels being provided with overhead manure drying sheds to catch droppings from the cage rows thereabove. The batteries are mounted on a framework supported on joist members and are spaced above the joist members. Power actuated scraper means are provided to remove dried manure, dirt or debris from the shed and movable bars are provided to prevent excessive build-up of manure, dirt or debris on the joist members.

3,783,830
AUTOMATIC MILKING BARN

William Z. Holm, Petaluma, Calif., assignor to Ross-Holm Division, Holm Tractor & Equipment Company, Petaluma, Calif.

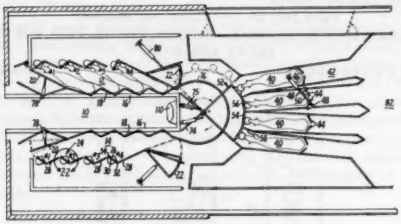
Division of Ser. No. 226,220, Feb. 14, 1972, which is a continuation of Ser. No. 62,714, Aug. 10, 1970, Pat. No. 3,699,922, which is a continuation of Ser. No. 730,818, May 21, 1968, abandoned. This application Apr. 5, 1973, Ser. No. 321,302

Int. Cl. A01k *05/02*

U.S. Cl. 119—14.03 **1 Claim**

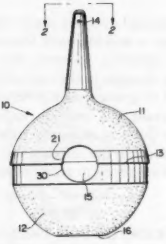
A herringbone milking parlor having automatic controls for preparation and movement of milking cows, stall adjusting

means for accommodating cows of different size in a single herringbone stall, and a swinging sector gate for transferring a



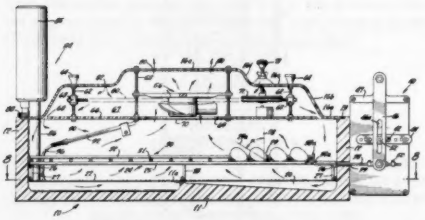
group of cows in sequence from a group of preparation stalls to a herringbone milking stall.

3,783,831
NESTING PLACE FOR PURPLE MARTIN
Edmond Lewis Patliff, 5139 Clinton Blvd., Jackson, Miss.
Continuation-in-part of Ser. No. 78,369, Oct. 6, 1970, abandoned.
Filed Dec. 15, 1972, Ser. No. 315,448
Int. Cl. A01k *31/00*
U.S. Cl. 119—23 **8 Claims**



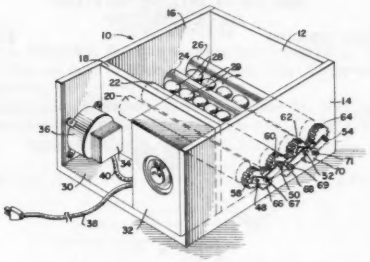
A nesting place for the purple martin made of a synthetic resin material and comprising a hollow housing having an upper portion and a lower portion removably affixed to said upper portion. An egress and ingress opening is divided between both portions. There are means for removably affixing the lower portion to the upper portion.

3,783,832
AUTOMATIC EGG INCUBATOR
Albert F. Marsh, 14232 Brookhurst, Garden Grove, Calif.
Filed May 19, 1972, Ser. No. 254,891
Int. Cl. A01k *41/06*
U.S. Cl. 119—37 **20 Claims**



A rack supports the eggs in rows with a movable grid above the rack extending between the eggs. The grid is moved periodically by a motor to turn the eggs. A transparent dome-like cover extending over the eggs supports a fan and a heater, while a plate supported by the cover directs the air downwardly around the periphery of the rack and upwardly towards the centrally supported fan. A humidifier water supply fountain is supported on the cover with a tube extending into a water compartment formed in the base of the incubator. An adjusting screw extending between the fountain and the cover adjusts the position of the lower end of the tube and thereby controls the water level within the incubator. The cover is formed with a peripheral flange which rests upon the side walls of the incubator so that the cover can be inverted during storage and shipment.

3,783,833
AUTOMATIC EGG TURNER
Rex Edward Bailey, P.O. Box 264, Hahnville, La.
Filed Mar. 12, 1971, Ser. No. 123,547
Int. Cl. A01k *41/06*
U.S. Cl. 119—44 **5 Claims**

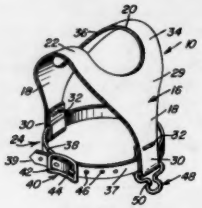


An automatic egg turner including an enclosure, a plurality of spaced rollers extending across the enclosure, an adjustable timer, a small electrical motor providing power to a gear reduction box, a power transmission train connected to the output gear of the gear reduction box, and normally opened switches in a control circuit periodically closed by camming means driven by the timer to energize the small motor and advance the rollers, thereby turning the eggs within the enclosure. The power transmission train employs a large input gear and a series of smaller driven gears and interspersed idler gears, so arranged that all of the rollers are advanced at the same time and in the same direction. The smaller driven gears and idler gears are held in constantly engaged and aligned position by a series of retainer links. The driven gears and idler gears are identical in shape. Consequently, when the control circuit is completed, the rollers are advanced so smoothly that layers of eggs can be stacked upon each other, with the lower layer serving as a roller for the eggs in each succeeding upper layers.

3,783,834
QUAIL HARNESS
Jake T. Story, 2206 N.W. 17th, Oklahoma City, Okla.
Filed Jan. 12, 1972, Ser. No. 217,338
Int. Cl. A62b *35/00*
U.S. Cl. 119—96 **1 Claim**

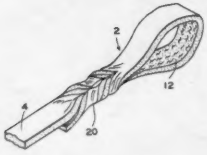
A harness for birds, particularly quail, having a first single, longitudinally extending strap forming breast and back strap portions and provided with an opening forming a collar for enclosing the neck of a bird to be harnessed. A second single, longitudinally extending strap removably connected to the first strap for encircling the body of the bird beneath the wings thereof. The second strap is provided with a buckle for selec-

tively connecting end portions thereof to one another. An eye is connected to an end portion of the first strap adjacent the



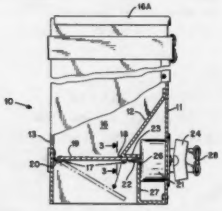
second strap for selectively connecting a line thereto for controlling the movement of the bird.

3,783,835
ANIMAL LEASH
Joseph Kepirq, R.D. No. 2, Parkesburg, Pa.
Filed July 14, 1972, Ser. No. 271,637
Int. Cl. A01k *27/00*
U.S. Cl. 119—109 **2 Claims**



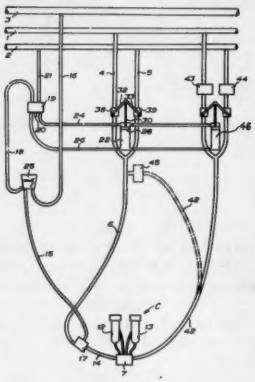
An animal leash is normally provided with two looped ends. One looped end is used to receive the hand of the person walking the animal. The other looped end is used to receive some type of fastening means which connects the leash to the animal. The leash herein has the two looped ends formed without the utilization of any fastening structures. The ends of the leash are braided into a loop, causing the leash itself to be the means for sustaining the loop structure.

3,783,836
TIMER CONTROLLED FEEDER APPARATUS
Albert E. Williams, 502 Hawkins Blvd., Copiague, N.Y.
Filed Nov. 16, 1972, Ser. No. 306,991
Int. Cl. A01k *5/02*
U.S. Cl. 119—51.14 **3 Claims**



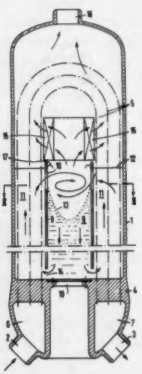
A timer controlled feeder apparatus in which the timer has a projecting pin that secures a door closed to retain feed material within a receptacle until a preset time interval has elapsed, and then the timer pin moves to release the door for opening to discharge the feed material from the receptacle.

3,783,837
MILKING MACHINE
Karl Erik Olander, Sodertalje, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden
Filed July 14, 1971, Ser. No. 162,448
Claims priority, application Belgium, Feb. 16, 1971, 99814
Int. Cl. A01j *05/04*
U.S. Cl. 119—14.08 **4 Claims**



A duct under partial vacuum leads mlk from the teat cup cluster and creates a milking milk therein, the duct having a regulating valve operable to vary the milking vacuum. A device for sensing changes in the rate of milk flow through this duct is connected to control means for operating the regulating valve to decrease the milking vacuum from a working value to an idling value in response to a decrease in the milk flow rate and in increase the milking vacuum from an idling to a working value in response to an increase in said rate.

3,783,838
STEAM GENERATOR FOR PRESSURIZED WATER NUCLEAR REACTORS
Eberhard Michel, Boxdorf, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed June 9, 1972, Ser. No. 261,249
Claims priority, application Germany, June 11, 1971, P 21 28 879.9
Int. Cl. F22b *1/06*
U.S. Cl. 122—34 **1 Claim**



A steam generator for pressurized water nuclear reactors has an upright U-tube bundle of heating surface members. A

cylindrical hollow chamber is provided at the center of the U-tube bundle and serves as preseparator for a steam-water mixture supplied tangentially to the chamber from a region of the U-tube bundle which contains the vertically extending legs, whereby water is separated from the steam-water mixture and flows downwardly while steam containing remnant moisture entrained therein flows upwardly from the hollow chamber. A fine separator is diposed between a portion of the U-tube bundle and the hollow chamber and separates the remnant moisture from the upwardly flowing steam to produce purified steam. The steam then passes through the above-mentioned portion of the U-tube bundle with the remnant moisture removed thereby providing increased super-heating of the steam.

3,783,839

ROTARY PISTON ENGINE WITH EXHAUST RECIRCULATING DEVICE

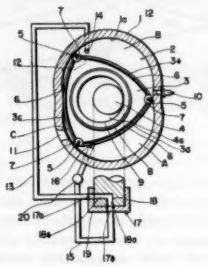
Hiroshi Shimizu, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima-ken, Japan

Filed Dec. 16, 1971, Ser. No. 208,746

Claims priority, application Japan, Dec. 21, 1970, 45/116179

Int. Cl. F02b *53/06*

U.S. Cl. 123—8.45 **23 Claims**



A rotary piston internal combustion engine provided with an exhaust recirculating device for effecting the reduction of both the nitrogen oxide content and the noxious unburned compounds present in the automobile exhaust gas and concurrently improving the engine power output with efficient fuel consumption by recirculating a portion of the exhaust gas from the engine working chamber under the power stroke to the engine working chamber under the compression stroke in response to the rotation of the power output shaft.

3,783,840

CYLINDER BLOCK

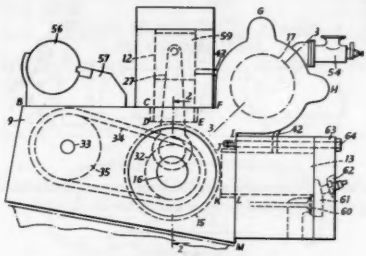
John Edward Squelch, 24B Greenfern Ave., Slough, England

Continuation-in-part of Ser. No. 808,798, March 20, 1969, abandoned. This application Mar. 4, 1971, Ser. No. 120,848

Int. Cl. F02d *39/04*; **F04b** *17/00*, *7/00*

U.S. Cl. 123—65 B **2 Claims**

A two-stroke internal combustion engine has cylinders in two planes offset from each other at 90°, a bore to contain a crankshaft is provided adjacent the inner ends of the cylinders and at right angles thereto, and a bore is provided within the included angle parallel to the crankshaft bore constituting a



valve cylinder which has ports for supplying air or fuel and air to the cylinders.

3,783,841

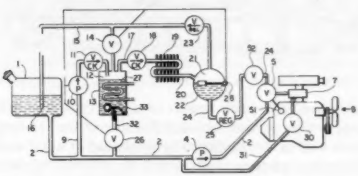
FUEL SYSTEM

Daniel A. Hirschler, Jr., Birmingham, and Frederick J. Marsee, Clawson, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 152,678, June 14, 1971, and a continuation-in-part of Ser. No. 174,015, Aug. 23, 1971. This application Oct. 4, 1971, Ser. No. 185,940

Int. Cl. F02m *31/16*

U.S. Cl. 123—127 **4 Claims**



A dual liquid fuel system for an internal combustion engine is disclosed which delivers a liquid volatile hydrocarbon fuel to the engine induction system during start and warm-up and switches to gasoline after the engine attains operating temperature. The volatile hydrocarbon fuel is generated from the normal gasoline used to operate the engine by delivering gasoline to a vaporizing chamber, heating the gasoline in the chamber to vaporize a portion thereof, and condensing the vapors.

3,783,842

LEAK-FUEL COLLECTING AND DETECTING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Karl Walter Kuhn, Saint-Germain-en-Laye, and Marcel Pierre Ernest Marie Corbin, L'Isle Adam, both of France, assignors to Societe D'Etudes Machines Thermiques, Saint-Denis, France

Filed Mar. 14, 1972, Ser. No. 234,513

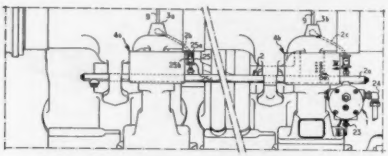
Claims priority, application France, Apr. 15, 1971, 7113340

Int. Cl. F02m *51/00*

U.S. Cl. 123—32 R **8 Claims**

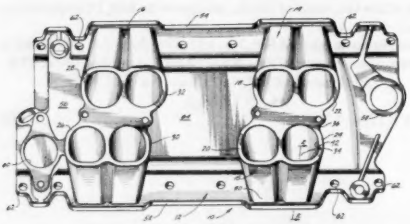
The present invention is concerned with a device for collecting and detecting leak-fuel in the fuel discharge pipe connecting the injection pump with the injector of the corresponding cylinder of an internal combustion engine. The device comprises a hood tightly covering the head of the injection pump and through which pass said delivery pipe and the

sheath surrounding it, and leak-fuel discharge means for discharging the leak-fuel accumulated in the internal volume



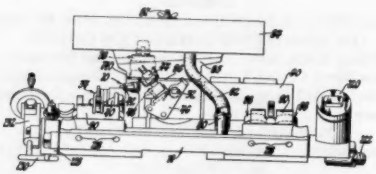
of said hood. Preferably, said discharge means comprise a collecting vessel provided with a warning device.

3,783,843
INLET MANIFOLD FOR AN INTERNAL COMBUSTION ENGINE
James D. McFarland, Jr., 20012 Septo St., Chatsworth, Calif.
Continuation-in-part of Ser. No. 130,329, April 2, 1971. This application Dec. 13, 1971, Ser. No. 207,407
Int. Cl. F02b *75/18, 75/22, 75/20*
U.S. Cl. 123—52 MV **13 Claims**



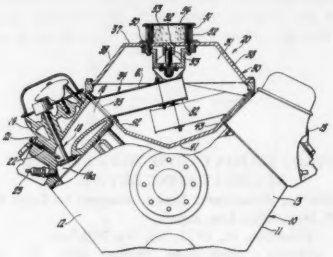
The entrance to each runner of a ram type manifold has a D-shaped cross section with the flat side of the D being along the short wall of the runner. The provision of a flat wall along the short side of the runner simulates a condition where all walls of the runner are of the same length. Consequently there is uniform flow of air and fuel throughout the cross section of each runner.

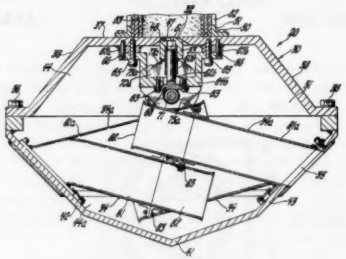
3,783,844
FUEL INJECTION SYSTEM
John A. Gural, Pittsford, N.Y., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 18, 1972, Ser. No. 227,456
Int. Cl. F02b *75/22*
U.S. Cl. 123—52 MV **1 Claim**



In an electronically controlled fuel injection system, the air inlet body and the fuel rails are secured by a bracket whereby the air and fuel metering components of the system which are mounted thereon may be tested and shipped in a unitary package.

3,783,845
AIR INDUCTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE
Walter R. Brandstetter, Isenbuttel, Germany, assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 21, 1972, Ser. No. 317,396
Int. Cl. F02b *29/02, 75/22*
U.S. Cl. 123—55 VE **4 Claims**



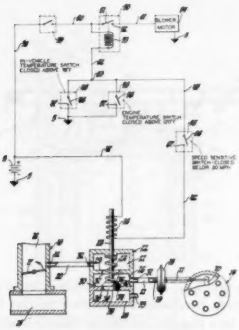


An air induction system for an internal combustion engine wherein an elongated, header housing adapted to be positioned between the banks of angularly disposed cylinders of the engine encloses an intake manifold chamber having an elongated throttle valve reciprocably positioned therein to regulate airflow to the engine through a rectangular aperture in the top wall of the housing to passages in the side wall of the housing, the side wall passages corresponding in number and position to the number of cylinders of the engine and the intake manifold chamber having header tubes positioned therein to further provide a uniform airflow from the aperture through the intake manifold chamber and the side wall passages to each of the cylinders of the engine.

3,783,846
INTERNAL COMBUSTION ENGINE IGNITION SPARK VACUUM ADVANCE SYSTEM
Bruce R. Barnhart, Livonia, and David C. Hill, Detroit, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 30, 1971, Ser. No. 203,369
Int. Cl. F02p *5/04*; **F02n** *17/00*
U.S. Cl. 123—117 A **1 Claim**

A system for enabling the ignition spark vacuum advance mechanism of an internal combustion engine until the engine has reached operating temperature for use with ignition spark vacuum advance systems which disenable the vacuum spark advance mechanism with vehicle speeds less than a predetermined magnitude of the type having a speed sensitive switch, closed below a selected vehicle speed, connected in series in the energizing circuit of the operating coil of a two-way valve which, when energized, operates the valve to the condition

which vents the associated spark advance vacuum unit to atmosphere. The parallel combination of a normally open temperature sensitive in-vehicle temperature switch and a normally open temperature sensitive engine temperature switch is



connected in series with the speed sensitive switch to prevent the operation of the valve to the condition which vents the spark advance vacuum unit vacuum port to atmosphere until the engine has reached operating temperature.

3,783,847

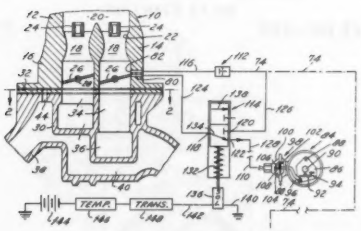
ENGINE SPARK CONTROL AND EXHAUST GAS RECIRCULATION VACUUM SIGNAL SELECTOR

Dale A. Kolody, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 6, 1972, Ser. No. 312,445

Int. Cl. F02m *25/06*; **F02d** *33/02*

U.S. Cl. 123—119 A **17 Claims**



An engine emission control system includes exhaust gas recirculating and engine spark timing devices each normally connected respectively to axially spaced EGR and spark ports in the carburetor induction passage above the closed position of the throttle valve. Valving is provided under the control of temperature changes and changes in the operation of the vehicle transmission to at times switch the connections to the exhaust recirculating device from EGR port to spark port operation and vice versa, to at times improve emissions while maintaining a constant vehicle drive quality, and at other times improve vehicle drive quality while maintaining a constant emission level.

3,783,848

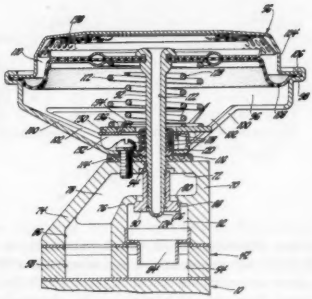
EXHAUST GAS RECIRCULATION VALVE

Ernst L. Ranft, Webster, N.Y., and William F. Thornburgh, Rochester, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 13, 1972, Ser. No. 314,569

Int. Cl. F02m *25/06*

U.S. Cl. 123—119 A **5 Claims**



A diaphragm operated control valve assembly, responsive to exhaust back pressure, controls recirculation of exhaust gases from the intake manifold exhaust crossover passage to the intake manifold induction passages. The back pressure signal is applied through a restrictive orifice in a passage formed in the valve stem. A screen disposed above the diaphragm prevents any ice formed on the diaphragm cover from dislodging to cause malfunction of the valve assembly.

3,783,849

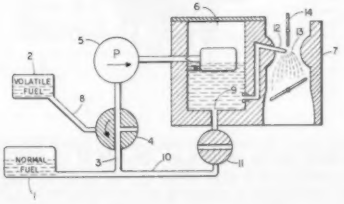
DUAL FUEL SYSTEM

Thomas Hugh Bramfitt, Pasadena, Tex., assignor to Ethyl Corporation, Richmond, Va.

Filed Nov. 5, 1971, Ser. No. 195,949

Int. Cl. F02m *1/06*

U.S. Cl. 123—127 **3 Claims**

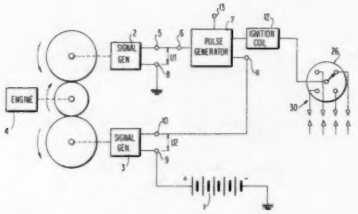


A fuel system for a spark ignited internal combustion engine which feeds gasoline and a volatile gasoline fraction to the engine has a volatile fuel generation means with an appropriate valve switching system designed to allow operation of the engine on the volatile fuel during start and warm-up and then switch to normal fuel during warmed-up operation. The self-generation system utilizes engine vacuum as an aid in vaporizing a portion of the normal gasoline.

3,783,850
IGNITION ADVANCE CIRCUIT

Roger Jean Habert, Epinay sur Seine, France, assignor to Ducellier & Cie, Paris, France

Continuation-in-part of Ser. No. 835,661, June 23, 1969, abandoned. This application Feb. 4, 1972, Ser. No. 223,627
Int. Cl. F02p 1/00, 5/04
U.S. Cl. 123—146.5 A 2 Claims

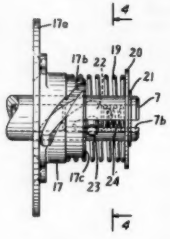


An ignition advance circuit which produces an advance varying linearly with engine speed and which advance reaches a maximum at some engine speed beyond which the advance remains fixed. Two voltage generators are driven by the engine. One generator has an output producing a series of time-separated pulses, each pulse increasing linearly from a fixed reference point. The other generator has an output which increases with engine speed. A pulse generator is controlled by a predetermined coincidence relationship between the outputs of the voltage generators.

3,783,851
REWIND STARTER

Noble Sherwood, Greenwich, and Ralph Lombard, Stamford, both of Conn., assignors to Textron, Inc., Providence, R.I.

Filed July 31, 1972, Ser. No. 276,536
Int. Cl. F02n 3/02
U.S. Cl. 123—185 BA 13 Claims

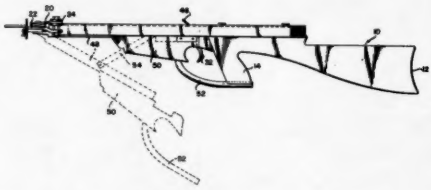


A rewind starter secured on the side of an internal combustion engine has a gear which is rotatable and axially slidable on a shaft which is rotatable in one direction by a pull cord wound on a pulley and in the opposite direction by a rewind spring. Means is provided for connecting the gear to the shaft so that when the shaft is rotated by pulling the cord, the gear is first moved axially to engage gear teeth on the fly wheel of the engine and then rotated with the shaft to crank the engine. When the engine starts, it immediately accelerates to a speed much higher than cranking speed. The starter gear is thereupon disengaged from the fly wheel gear but before full disengagement, it is given a forward spin. The connecting means between the starter shaft and gear permits the gear to overrun the shaft and avoids shock or impact. Means is provided for applying a frictional drag to rotation of the gear.

3,783,852
ELASTIC TYPE ARROW PROJECTING GUN

Robert G. Shepherd, 1513 Sewanee Dr., Columbia, S.C.

Filed Sept. 28, 1972, Ser. No. 292,896
Int. Cl. F41b 7/00
U.S. Cl. 124—22 4 Claims

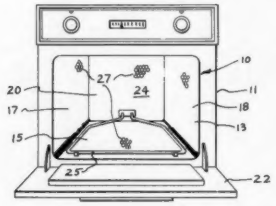


A cocking mechanism for a crossbow type weapon includes a cocking lever pivotally connected to the outer end of the weapon and to a trigger assembly slideable along the length of the weapon. A U-shaped portion of the carriage assembly automatically engages and holds the loop type bowstring of the bow and forces it as the carriage moves, the bowstring being tensioned in response to the movement of the cocking lever from a position underlying and perpendicular to the weapon to a position substantially adjacent to the weapon and received between a trackway which guides a projectile. The U-shaped member is spring biased to an out of bowstring engaging position, and the U-shaped member is pivoted into an upright position to receive the bowstring when an extension of the U-shaped member engages the bowstring when the carriage is moved forwardly by the action of the cocking lever. A trigger holds the U-shaped member in a bowstring engaging position.

3,783,853
TEXTURED CONTINUOUS CLEANING SURFACE FOR COOKING OVENS

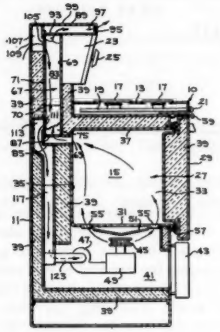
Raymond L. Dills, Louisville, Ky., assignor to General Electric Company

Filed May 30, 1972, Ser. No. 257,777
Int. Cl. A21b 1/00
U.S. Cl. 126—19 R 7 Claims



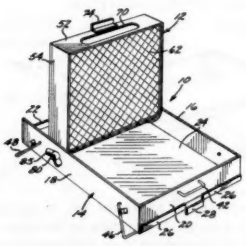
A cooking oven having at least the bottom wall and the two sides, and the rear wall, formed of embossed metal with a layer of vitreous porcelain enamel of dark porous matte finish covering the exposed surface of the embossed metal to have the continuous cleaning property during normal cooking operations of diminishing the accumulation of carbonaceous residue which results from the exposure to grease spatters during cooking.

3,783,854
FLOW-THROUGH SELF-CLEANING GAS OVEN WITH HEAT EXCHANGER
Bohdan Hurko, and Raymond L. Dills, both of Louisville, Ky., assignors to General Electric Company
Filed Aug. 1, 1972, Ser. No. 277,073
Int. Cl. A21b *1/28*
U.S. Cl. 126—21 R **10 Claims**



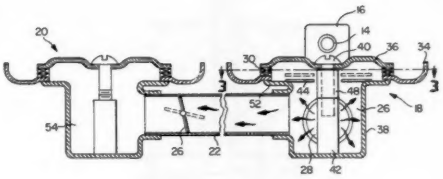
A self-cleaning gas-fired oven having a power burner beneath the oven cooking cavity so the flue gases pass up through the cooking cavity and exit through an oven exhaust means at the top rear of the oven. A counterflow heat exchanger rising from the oven exhaust means, and an air collector means at the bottom of the heat exchanger to convey the preheated cooling air to the power burner by means of a motor-blower unit. The heat exchanger is of special design with cylindrical flue gas tubes so the opposite wall plates operate at relatively cool temperatures.

3,783,855
HEATING DEVICE
Vann O. Newinger, 452 Holly St., Laguna Beach, Calif.
Filed Aug. 25, 1972, Ser. No. 284,010
Int. Cl. A47j *37/07*
U.S. Cl. 126—25 R **5 Claims**



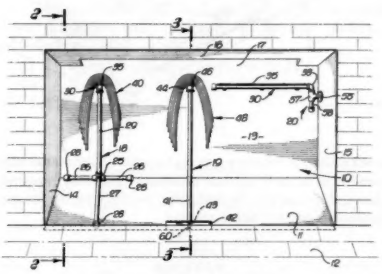
The functions of barbecue cooker, fry plate, and space heater are combined in a single unit consisting of a tray on which a fire box is pivotally mounted. The fire box is formed with a grate at one surface, and a solid wall at an opposite surface and it can be tilted so that either of those surfaces lies substantially horizontally for use in barbecuing or frying. The fire box can also be mounted vertically so that heat escapes through its grate in a horizontal direction to form the space heating function. The tray serves as an ash collector, as a support for the fire box in its several positions, and as a means by which the fire box is made portable without need to extinguish its burning fuel.

3,783,856
FLAME EQUALIZER FOR TWO OR THREE BURNER CAMP STOVES
James H. Amos, Mission Hills, Calif., assignor to Minnesota Mining and Manufacturing Company
Filed Oct. 14, 1971, Ser. No. 189,357
Int. Cl. F24c *15/10*; **F23d** *23/00*
U.S. Cl. 126—38 **10 Claims**



A flame equalizer for use in a two or three burner camp stove of the type having a primary burner with a series connection for fuel flow to the other burners associated therewith, the flame equalizer being contained within the primary burner to provide a variable restriction for the gas flow from the plenum to the primary burner surface to divert an equal flow of gas to the secondary burners as the secondary burners are actuated.

3,783,857
FIREPLACE ACCESSORY FOR BURNING NEWSPAPERS
George B. Schwenk, Yucca Valley, Calif.
Filed June 5, 1972, Ser. No. 259,493
Int. Cl. F23h *13/00*
U.S. Cl. 126—164 **3 Claims**

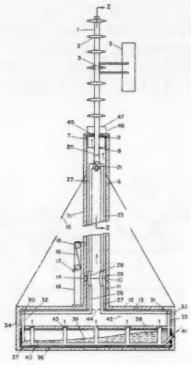


A T-shaped metal base supporting a vertical metal member on the upper end of which a horizontal paper supporting arm is pivotally supported at one of its ends to swing freely on a vertical axis, the stem of the base, the vertical member and the arm each being approximately 18 inches in length.

3,783,858
WIND OPERATED HEATING SYSTEM
Baruir Ashikian, 505 Frechette, Sherbrooke, Quebec, Canada
Filed Sept. 1, 1971, Ser. No. 177,009
Int. Cl. F24c *9/00*
U.S. Cl. 126—247 **8 Claims**

The pressure decrease resulting from wind's flow around suitably shaped bodies is used in a manner to produce oscilla-

tions in a suitably contained mass of liquid and the heat



generated by the accompanying viscous dissipation is stored in the liquid and used as needed.

3,783,859

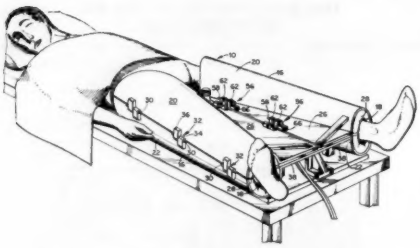
NOVEL EXTERNAL CIRCULATORY ASSIST DEVICE

Harold S. Sauer, Carlisle; Nubar D. Hagopian, Waltham, and John M. Colman, Lexington, all of Mass., assignors to Medical Innovations, Inc., Waltham, Mass.

Filed Oct. 13, 1972, Ser. No. 297,250

Int. Cl. A61h *1/00*

U.S. Cl. 128—24 R **6 Claims**



Novel external pressure circulatory assist apparatus utilizing movement of a shell portion of a limb-enclosing housing as a mechanical means for applying the requisite cyclic pressure to the limbs of a patient being treated.

3,783,860

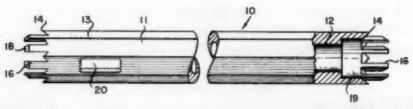
INTRAMEDULLARY ROD

Albert H. Burstein, Shaker Heights, and William C. Allen, Gainesville, both of Fla., assignors to The Sampson Corporation, Pittsburgh, Pa.

Filed Oct. 27, 1972, Ser. No. 301,473

Int. Cl. A61f *5/04*

U.S. Cl. 128—92 BC **6 Claims**



An intramedullary rod for internal fixation of long bone fractures in the form of an elongated hollow tube having longitudinal flutes about the periphery. Each end is castellated to provide alternate sharp cutting surfaces and angled face guide projections to facilitate emplacement in the medullary canal.

3,783,861

INSERTER FOR INTRAUTERINE DEVICES

Harvey J. Abramson, New York, N.Y., assignor to G. D. Searle & Co., Chicago, Ill.

Filed June 11, 1971, Ser. No. 152,101

Int. Cl. A61f *5/46*

U.S. Cl. 128—127 **27 Claims**

An instrument for the insertion into the uterus of a flexible contraceptive device formed from a tubular barrel having a first end for insertion into the uterus and an adjustable stop member for engaging the cervical is at a selected distance for the anterior end of the insertion end. The barrel has diametrically opposed axially extending apertures therein located posteriorly of the stop member for receiving the intrauterine device with the first arm thereof extending through the apertures transversely of the barrel and the second arm extending axially within the barrel toward the posterior portion thereof. A crossbar is provided on the barrel adjacent the apertures for folding the first arm into the barrel adjacent the second arm and substantially parallel thereto. A plunger member, telescopically inserted in the posterior portion of the barrel, has a free end adapted to move the folded intrauterine device from its position adjacent the apertures through the first barrel end to deposit the device in the uterus.

3,783,862

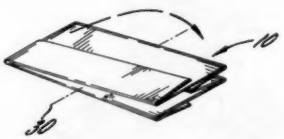
SURGICAL TOWEL

Mark S. Schrading, Menasha, and Marion T. Arps, Neenah, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed July 7, 1971, Ser. No. 160,428

Int. Cl. A61f *13/00*

U.S. Cl. 128—132 D **2 Claims**



An elongated rectangular towel for use in squaring off a fenestration during a surgical operation or the like, the towel being transversely folded along two longitudinal fold lines forming a center and two outer portions, one of which is folded on the top of the center, with the other being folded under the center.

3,783,863

METHOD AND APPARATUS FOR IMMOBILIZING A PATIENT AND CONDUCTING AN X-RAY EXAMINATION

Waldo H. Kliever, P.O. Box 136, Gates Mill, Ohio

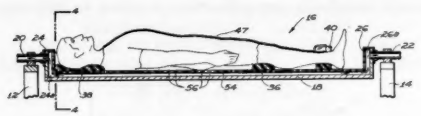
Filed Feb. 1, 1971, Ser. No. 111,602

Int. Cl. A61g *13/00*

U.S. Cl. 128—134 **21 Claims**

Patient immobilizing apparatus comprises a patient supporting table unit on which a patient lies. The patient is covered by

an imperforate sheet of film-like material which forms a seal between the patient's body and the table. The region between

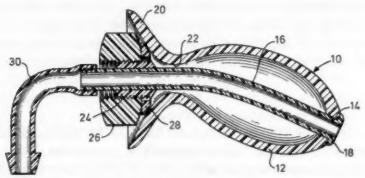


the table top, the patient and the sheet is evacuated so that differential pressure forces secure the patient on the table.

3,783,864
EAR PLUG

Frederik Christian Moller, 46, Finsensgade, Arhus N, Denmark

Filed Oct. 8, 1969, Ser. No. 864,592
Claims priority, application Denmark, Oct. 11, 1968, 4897/68
Int. Cl. A61f *11/02*
U.S. Cl. 128—152 **3 Claims**

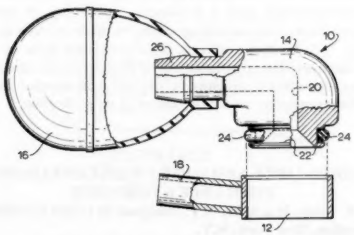


The invention relates to an ear plug to be inserted into the auditory meatus of an ear, having an exterior member of a soft flexible material and an interior tubular member which extends through the exterior member from one end thereof, and having manually operable means, operatively connected with the exterior as well as the interior member, operable to cause an expansion of the exterior member and thereby engage the exterior member firmly against the wall of the auditory canal.

3,783,865
SUCTION ELECTRODE

James R. Ricketts, Milwaukee, Wis., assignor to Marquette Electronics Inc., Milwaukee, Wis.

Filed Nov. 8, 1971, Ser. No. 196,605
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 E **5 Claims**

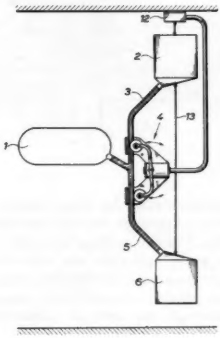


An improved suction electrode includes an electrically conductive ring suitable for application to the patient's skin. A body having an angular passage therethrough is affixed to the ring by a static sealing means such as an O-ring. A suction bulb is mounted on the body in communication with the passage to provide the suction necessary to affix the electrode to the skin.

3,783,866
DOSING DEVICE UTILIZING AN ELECTRONIC SCALE AND REGULATING MEANS

Erkki Tapio Tirkkonen, Kajavarannantie 3 as 5, Helsinki, Finland

Filed Feb. 3, 1971, Ser. No. 112,112
Claims priority, application Finland, Feb. 5, 1970, 318/70
Int. Cl. A61m *5/00*
U.S. Cl. 128—213 **4 Claims**

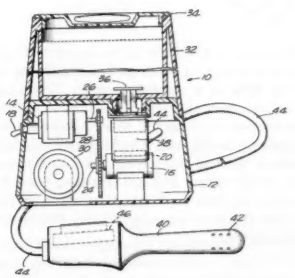


A method for dosing patients with blood, nutrients, chemical solutions and the like, using a new device which includes gravity dose feeding means and gravity dose removal means both in communication with a regulating valve. The valve is regulated by an electric motor which is turn controlled by an electronic scale. The scale senses changes in gravity flow containers to automatically control the dosage.

3,783,867
WOMAN'S HYGIENE APPARATUS

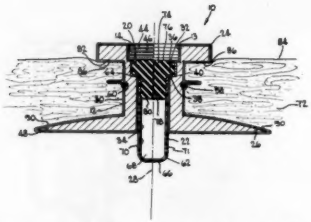
E. John Summersby, Lawndale, and Dietmar Nagel, Redondo Beach, both of Calif., assignors to Beverly Enterprises, Pasadena City, Calif.

Filed Dec. 7, 1970, Ser. No. 95,524
Int. Cl. A61m *1/00*
U.S. Cl. 128—230 **3 Claims**



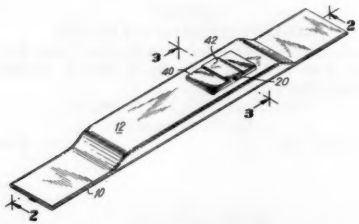
A woman's hygiene apparatus having a fluid container, nozzle, pump, and motor. The nozzle has a hollow tubular structure with a number of perforations at its extended end. The pump contains a pressure relief mechanism to limit the maximum pressure output of the pump, so that a user cannot inadvertently exceed the medically determined maximum pressure and thereby cause injury.

3,783,868
PERCUTANEOUS IMPLANT
Jack C. Bokros, San Diego, Calif., assignor to Gulf Oil Corporation, Pittsburgh, Pa.
Filed May 6, 1971, Ser. No. 140,869
Int. Cl. A61m *31/00*; **A61f** *1/00*
U.S. Cl. 128—260 **12 Claims**



A percutaneous device for drug injection in a living body which is implanted through the skin and which has a pyrolytic carbon coating. The device has a stem and a stabilizing flange, and a collar associated with the stem for preventing the progressive growth of epithelium tissue along the stem and for anchoring the device. A normally closed valve is in a passageway through the stem for administration of medication.

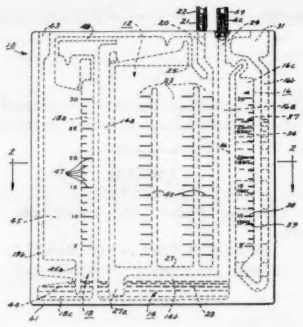
3,783,869
COMBINED SANITARY NAPKIN AND MEDICATED BANDAGE
Leonard B. Schnipper, 2373 56th Dr., Brooklyn, N.Y.
Filed May 20, 1972, Ser. No. 236,386
Int. Cl. A61m *35/00*; **A61f** *13/16*
U.S. Cl. 128—261 **21 Claims**



Medication, in the form of an anaesthetic gel, is applied to the incision resulting from an episiotomy by providing a gel-retaining zone in a sanitary napkin. The medication is provided on an impermeable layer affixed to the absorbing face of the napkin and is protected from contamination, prior to use, by a covering membrane. The impermeable layer between the anaesthetic gel and the napkin prevent the absorption of the former on the latter. The gel-retaining zone is approximately two inches by three inches in size and is spaced by about one inch from the forward edge of the absorbent region of the sanitary napkin.

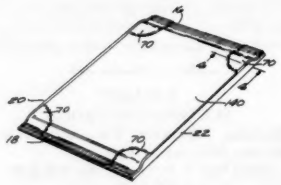
3,783,870
SUCTION DRAINAGE DEVICE
Eli Schachet, St. Louis, Mo., assignor to Sherwood Medical Industries, Inc., Saint Louis, Mo.
Filed Dec. 27, 1971, Ser. No. 212,075
Int. Cl. A61m *1/00*
U.S. Cl. 128—276 **12 Claims**

A suction drainage device having a drainage collector chamber for connection to a pleural cavity, a series liquid seal chamber connecting the collector chamber with a pressure regulating manometer chamber, and a second manometer connected to the collector chamber in by-passing relation with the seal chamber having calibrations providing an indication



of the pressure within the collector chamber, the pressure regulating chamber being connectable through a restricted orifice to the source of negative pressure to reduce the bubbling of air through the reservoir portion of the manometer.

3,783,871
DIAPER WITH THICKENED FASTENING AREAS
Reinhardt N. Sabee, 728 S. Summit St., Appleton, Wis.
Continuation-in-part of Ser. No. 17,714, March 9, 1970, abandoned. This application Feb. 14, 1972, Ser. No. 226,067
Int. Cl. A41b *13/02*
U.S. Cl. 128—287 **24 Claims**



An article such as a diaper or bed pad which includes a pad, an absorbent ply and a polymeric cover ply of extruded synthetic resin, may advantageously be made in various forms having, if desired, a synthetic resin cover ply light in weight and selectively given variable pin or tape retention strength by varying extrusion according to the strength needed to make the film stronger or weaker or softer or more flexible.

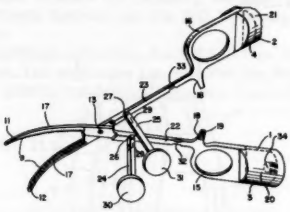
3,783,872
DISPOSABLE ABSORBENT PADS CONTAINING INSOLUBLE HYDROGELS
Paul A. King, Warwick, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed June 23, 1969, Ser. No. 835,721
Int. Cl. A61f *13/16*
U.S. Cl. 128—290 R **9 Claims**

Improved disposable absorbent articles, such as diapers, catamenial devices and sanitary napkins, are provided which contain certain insoluble hydrogels as an absorbing media.

3,783,873
WEIGHTED SURGICAL CLAMP HAVING FOLDABLE PROP

Harvey Barry Jacobs, 11613 Vantage Hill Rd., Reston, Va.

Filed Sept. 16, 1971, Ser. No. 181,040
Int. Cl. A61b *17/02, 17/08, 17/28*
U.S. Cl. 128—303 R **2 Claims**

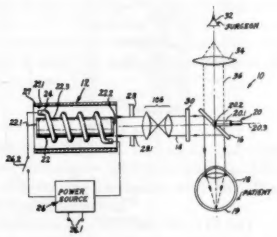


Weighted clamp for surgical retracting use in the operating room. In one form, a clamp is fitted with weights in one or both handles which may be detachable and will vary in accordance with the surgical procedure. For gall bladder or hernia operations in adults the weights may vary from about ½ pounds to about 5 pounds. In infants the weights are smaller, e.g., from ¼ to 2 pounds. For venous or arterial surgery the weights may vary from 2 to 6 ounces for light veins up to 1–2 pounds for larger arteries. For use in stabilizing fractures the weights vary from 2 pounds up to 50 pounds. The weighted units may be screwed on, clipped on, pushed on or magnetically attached to or taken off of the handle. A pivoted folding prop is attached to each leg of the clamp. The arms of the prop are swung outwardly to stabilize the weighted clamp in, outside or on the body. A modified form of weighted clamp is fitted with a suction pad in the jaw portion for atraumatically holding hollow organs, such as bowel, heart or lung or solid organs such as spleen, liver, or kidney and the handles with pad may be separated by unbolting at the scissors pivot.

3,783,874
METHOD AND APPARATUS FOR EFFECTING PHOTO-COAGULATION

Charles J. Koester, South Woodstock, Conn., and Elias Snitzer, Sturbridge, Mass., assignors to American Optical Company, Southbridge, Mass.

Continuation-in-part of Ser. No. 108,020, May 5, 1961, abandoned. This application Oct. 23, 1963, Ser. No. 318,456
Int. Cl. A61b *17/36*
U.S. Cl. 128—303.1 **8 Claims**

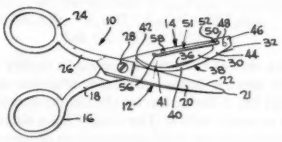


1. Photo-coagulation apparatus comprising laser means having a pair of plane, parallel, reflective, opposite end surfaces, said laser means being actuable to emit a collimated beam of relatively intense light from one of said surfaces in a single direction perpendicular to said surface, means for directing said light through the pupil of an eye to be concentrated upon a selected fundus area by refractive media of the eye for effecting photo-coagulation of said fundus area, and means adapted to direct a beam of collimated light of relatively lower intensity upon said light-emitting surface of the laser means to be reflected therefrom in said single direction perpendicular to said surface, whereby said apparatus can be positioned for directing said reflected beam of light upon an eye to be concentrated upon a selected fundus area prior to actuation of the laser means, and can thereby be positioned for directing light subsequently emitted from the laser means to be concentrated upon the selected fundus area for effecting photo-coagulation of said fundus area.

3,783,875
CIRCUMCISION SURGICAL TOOL

Alan W. Winshel, 1408 Patuxent Dr., Silver Spring, Md.

Filed Apr. 21, 1972, Ser. No. 246,467
Int. Cl. A61b *17/326*
U.S. Cl. 128—318 **6 Claims**

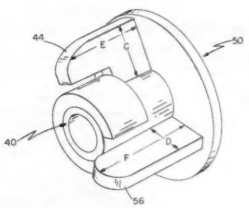


A surgical tool fashioned from scissors having an attached cam member for moving along the lateral face of one scissor member thereby crushing skin positioned between the cam and lateral face which seals veins and arteries along the crushed line. Scissor action follows the crushing action and severs skin along the crushed line instantaneously.

3,783,876
TABBED ECCENTRIC LOCKING DEVICE

John F. Dye, Barrington, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed May 4, 1972, Ser. No. 250,237
Int. Cl. A61b *17/34;* **A61m** *25/02*
U.S. Cl. 128—347 **10 Claims**

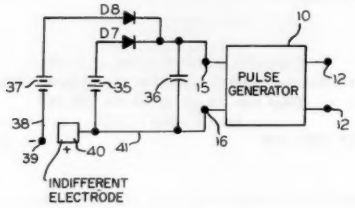


A locking guard device regulating the penetrating depth of a rigid or semi-rigid hollow member such as a hypodermic needle, catheter, or hollow members used for draining body cavities, is formed by mounting on the shaft of the member a guard comprising a male and female element with holes bored therethrough, the holes being concentric with respect to each other but eccentric with respect to the true centers of the elements. Both the male and the female elements of the guard are provided with projecting tab members, so that pinching the tab members together locks the guard upon the shaft upon which they are mounted.

3,783,877
BODY IMPLANTABLE STIMULATOR BATTERY UTILIZATION CIRCUIT

David L. Bowers, Wauwatosa, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Apr. 26, 1971, Ser. No. 137,418
Int. Cl. A61n 1/36
U.S. Cl. 128—419 P 2 Claims

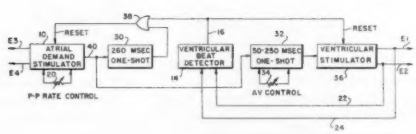


Paralleled sets of batteries are used to supply power to an implantable electric organ stimulator stimulus signal generator. Each set has a device having the characteristics of a diode connected in series with it. The diodes have different forward voltage characteristics. One preferred set of batteries supplies current initially and the others do not deliver current unless the preferred battery is near depletion or unless there is a high current drain from the batteries. In one embodiment, a mild but perceptible physical sensation is produced to warn a patient of impending battery depletion.

3,783,878
ATRIAL AND VENTRICULAR PACER HAVING INDEPENDENT RATE AND AV DELAY CONTROLS

Sherwood S. Thaler, Lexington, and Richard E. Daynard, Chelmsford, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Dec. 6, 1971, Ser. No. 205,178
Int. Cl. A61n 1/36
U.S. Cl. 128—419 P 7 Claims

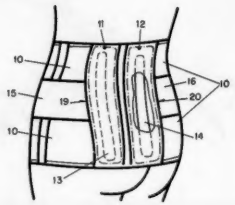


There is disclosed an atrial and ventricular pacer having independent rate and AV delay controls. Adjustment of one potentiometer changes the basic pacer rate without affecting the AV delay; adjustment of another potentiometer varies the AV delay without affecting the pacer rate. This is achieved by having the rate control determine the atrial escape interval, a variable one-shot multivibrator being provided to delay the ventricular stimulus after it is triggered simultaneously with the generation of an atrial stimulus. The variable one-shot multivibrator is reset when a spontaneous ventricular beat is detected, and the atrial timing period always begins at the end of a fixed time interval following an atrial stimulus, the fixed time interval being longer than the maximum AV delay.

3,783,879
WAIST SUPPORT AND HIP GIRDLE

Otto Stalder, Buchs/Schweiz, Switzerland, assignor to Etablissement Temova, Vaduz, Furstentum, Fla.

Filed Aug. 25, 1971, Ser. No. 174,637
Claims priority, application Switzerland, Sept. 2, 1970, 13088/70
Int. Cl. A41c 1/00
U.S. Cl. 128—570 7 Claims

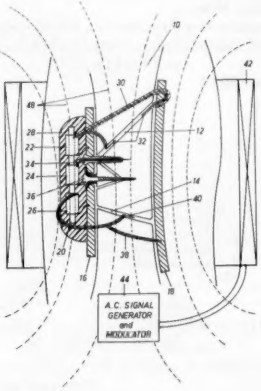


Waist support and hip girdle having a trunk part of knitted elastic fabric made of synthetic fibers suitable for producing static electricity and of sufficiently open mesh construction to allow skin moisture to evaporate. The girdle has spaced parallel stiffeners at the back and adapted to be positioned parallel to the spinal column, one on each side thereof, when the girdle is worn. The girdle also includes a strong elastic band having ends secured at the back adjacent the stiffeners without overlapping the latter, and having front ends adapted to be fastened together to close the girdle.

3,783,880
METHOD FOR AIDING FORMATION OF BONE FORMING MATERIAL

Werner Kraus, Bauerstrasse 31, Munich, Germany

Division of Ser. No. 26,809, April 9, 1970, Pat. No. 3,745,995.
This application May 1, 1973, Ser. No. 356,162
Claims priority, application Germany, Apr. 10, 1969, P 19 18 299.1
Int. Cl. A61n 15/00
U.S. Cl. 128—82.1 12 Claims



Method for aiding formation of bone forming material in the region of a bone structure of a living being. Two electrodes are applied to spaced areas on opposite sides of the region of the bone structure. An alternating electric potential difference is applied across the electrodes. This potential difference has a

frequency below 100 c/s and a magnitude such that it produces a current density of at most 10 $\mu A/mm^2$ at the electrode surfaces in physical contact with the areas.

3,783,881

METHOD AND MACHINE FOR MAKING A CONTINUOUS CIGARETTE ROD

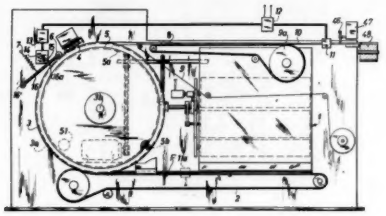
Georg Lakos, Wentorf Bei Hamburg, Germany, assignor to Hauni Werke Koerber and Co. KG, Hamburg-Bergedorf, Germany

Continuation-in-part of Ser. No. 152,510, Nov. 15, 1961, abandoned. This application Jan. 13, 1966, Ser. No. 528,688

Claims priority, application Germany, Nov. 17, 1960, H 40971

Int. Cl. A24c *05/34*

U.S. Cl. 131—21 D **8 Claims**



A cigarette rod making machine including a hopper to feed a stream of shredded tobacco containing tobacco in excess of that required in the rod, onto an elongated conveyor adapted to form the same into a filler stream. The filler stream is conveyed thereby to the lower portion of a vertically disposed suction wheel having a peripheral groove adapted to receive the stream and hold the same therein. A trimmer is positioned adjacent to the periphery ofthe wheel near the upper portion thereof, and is adapted to remove the excess in order to provide a uniform rod. An adjustable roller is positioned adjacent to the periphery of the wheel in advance of the trimmer, and presses on the free surface of the tobacco stream in the groove in order to compact the same before the excess is removed by trimming. The roller is driven so that its peripheral speed is the same as the peripheral speed of the wheel. The trimmed stream is transferred to another elongated conveyor where it is wrapped into a rod and then cut into individual cigarettes. A detector measures the quantity of tobacco in the wrapped rod and provides a signal which is fed to a device which adjusts the position of the roller with respect to the suction wheel thereby controlling the degree of compaction of the filler stream in advance of the trimmer. If desired, a detector may be located so as to measure the quantity of tobacco in the filler stream. The trimmed excess is returned to the filler stream in advance of the wheel.

3,783,882

DEVICE FOR FILLING CIGARETTE TUBES

Rudolf Messner, Trossingen, and Hans-Joachim Zilken, Stuttgart, both of Germany, assignors to EFKA-Werke Fritz GmbH, Trossingen, Germany

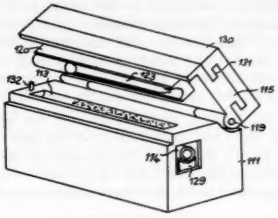
Filed Dec. 28, 1971, Ser. No. 212,941

Claims priority, application Germany, Dec. 31, 1970, P 20 64 641.7; Aug. 19, 1971, P 21 41 471.1

Int. Cl. A24c *05/42*

U.S. Cl. 131—70 **14 Claims**

A device for filling cigarette tubes or cigarette filter tubes comprising a housing with a chamber for pressing tobacco, the chamber being arranged in the longitudinal direction of the housing and having the shape of a first half shell fixed in the housing. A press bar in a hinged lid covers the housing and forms the second half shell on the side of the lid. An ejector



slide for ejecting a compressed tobacco plug into a paper tube is provided.

3,783,883

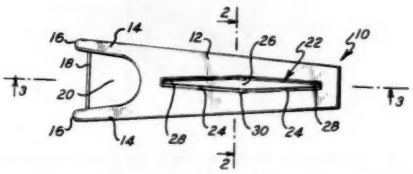
COMBINATION DENTAL FLOSS HOLDER AND TOOTHPICK

Dale Alexander, 324 Royal Palm Way, Palm Beach, Fla.

Filed May 16, 1972, Ser. No. 253,846

Int. Cl. A61c *15/00*

U.S. Cl. 132—91 **1 Claim**



A device for cleaning teeth formed of a handle portion having a toothpick detachably mounted thereto, and an end portion extending away from the handle portion having a string of dental floss secured thereto.

3,783,884

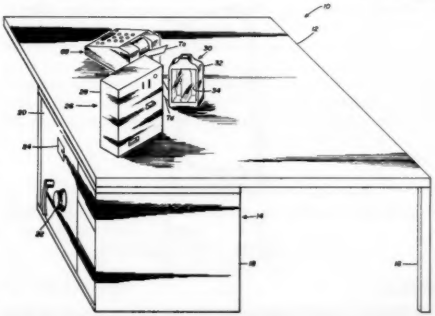
SECURE MONEY CHANGING AND MONEY RECEIVING SYSTEM

Edwin W. Carlberg, Dallas, Tex., assignor to Dale O. Simpson, Dallas, Tex., a part interest

Filed Nov. 19, 1971, Ser. No. 200,404

Int. Cl. G07f *9/00*

U.S. Cl. 133—1 R **3 Claims**



A secure money changing and money receiving system for convenience establishments and the like includes a safe, a

money-changing apparatus, and a money receiving apparatus. The safe has a theft proof housing and a normally locked access door, and the money-changing apparatus has a theft proof housing which is attached to the housing of the safe. The money receiving apparatus includes a theft proof housing having at least one window and includes a partition which separates the housing into coin and currency receiving portions. A pair of doors are provided for normally retaining coins and currency in the coin and the currency receiving portions of the housing, respectively, and for selectively permitting the coins and the currency to pass into the safe. Thus, all of the money that is on the premises of the convenience establishment is situated either in the safe or in the change-making apparatus and is therefore totally secure from theft.

3,783,885

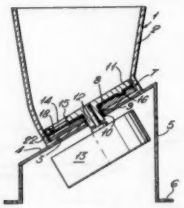
DISC DISPENSING APPARATUS

John Gordon Williams, 74 Ravenhill Rd., Swansea, and Peter John Griffiths, 2 Castle St., Glamorgan, both of Wales

Filed June 27, 1972, Ser. No. 266,648

Int. Cl. G07d *1/00*

U.S. Cl. 133—5 **16 Claims**



The specification discloses a disc dispensing apparatus in which the discs are placed in a hopper in the base of which is a pair of plates placed one above the other, the upper plate being rotatable and having a number of holes to receive discs which drop into a recess of the lower plate and are ejected from the recess by an ejecting member depending from the upper plate and running in an annular groove in the lower plate.

3,783,886

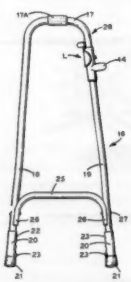
FOLDING WALKER

Morton I. Thomas, 125 South St., Monroe, N.Y.

Filed Sept. 24, 1971, Ser. No. 183,360

Int. Cl. A45b *1/00*

U.S. Cl. 135—45 A **3 Claims**



A folding walker construction having side members swivelly mounted on a front member for movement from an open operative position, to a folded inoperative position to allow for convenient storage when not in use. Improved locking means is provided for maintaining the side members in their open position, in rigid locked relation to the front member; the locking means including release means operative to allow the side members to be moved to their folded overlapping position; the release means being of a character to allow the same to be easily operated with a minimum force requirement.

3,783,887

SELF-CLOSING VALVE DEVICE IN A PIPING SYSTEM OF FLUIDS

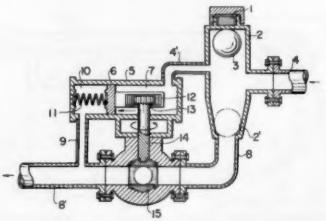
Akira Shoji, Tokyo, Japan, assignor to Nippon Automation Kiki Co., Ltd., Tokyo, Japan

Filed May 24, 1972, Ser. No. 256,528

Claims priority, application Japan, June 23, 1971, 46/45437

Int. Cl. F16k *17/36*

U.S. Cl. 137—38 **8 Claims**



A self-closing valve device in a piping system of fluids comprising : a permanent magnet provided in the upper part of a valve chamber, a globe valve member hanging down attracted by said permanent magnet, an inlet pipe for a fluid being connected to a primary side including an upper portion of the valve chamber and a piston in a control cylinder, an outlet pipe for a fluid located at the bottom of said valve chamber and adapted to close by fall of said globe valve member, said outlet pipe being connected to a secondary side of said control cylinder, and a shut-off valve disposed in a piping system connecting the inlet pipe to the outlet pipe, said shut-off valve being closed by pressure difference of a fluid through transmission means combined with the piston in the control cylinder.

3,783,888

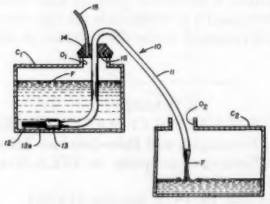
SIPHON

Verne E. Johnson, P.O. Box 421, Rockford, Minn.

Filed Nov. 8, 1971, Ser. No. 196,403

Int. Cl. F04f *10/02*

U.S. Cl. 137—145 **2 Claims**



A siphon particularly adapted for transferring gasoline with operator induced pressurizing means for initiating fluid flow without exposing the operator's mouth to the fluid path. The siphon is characterized by a primary siphon tube and a secondary blow tube each of which pass through a flanged collar, and includes a screen and weight on the intake end of the primary siphon tube.

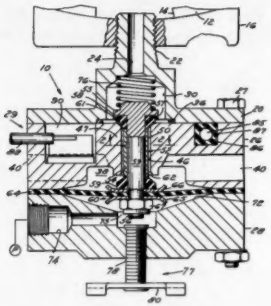
3,783,889
CONDENSATE VALVE

Kenneth E. Pyle, Marine City, Mich., assignor to Reef-Baker Corporation, East Detroit, Mich.

Continuation-in-part of Ser. No. 31,649, April 24, 1970, Pat. No. 3,682,194. This application June 15, 1972, Ser. No. 263,093

Int. Cl. F16t *1/00*

U.S. Cl. 137—204 **1 Claim**



A condensate valve comprising a housing having a chamber for the accumulation of liquid, and a double-acting valve member for closing an outlet passage from the chamber. The valve member comprises a stem having a rod extending through the passage and also comprises a tubular member sleeved on the rod which is of polygonal cross section to guide the reciprocatory movement of the valve member in the passage while providing clearnace for the flow of liquid. Sealing members are sleeved on the rod at opposite ends of the tubular member. The sealing members and tubular member are held assembled on the rod by a nut. A manually operable device is provided for holding the valve member in a shut-off position and for holding it in an intermediate position for draining the condensate valve.

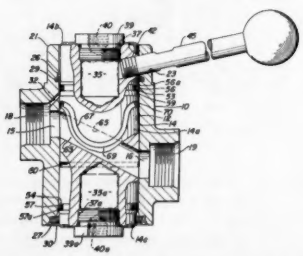
3,783,890
PLUG VALVE WITH STORAGE COMPARTMENT

Paul D. Wurzburger, 3255 E. Monmouth Rd., Cleveland, Ohio

Filed Dec. 4, 1972, Ser. No. 311,845

Int. Cl. F16k *31/528*

U.S. Cl. 137—315 **6 Claims**



A rotary plug valve including a valve body open at one or both axial ends and having a bore with a lateral inlet port and a lateral outlet port communicating with the bore on opposite sides thereof. A plug is provided in the bore having a passage which communicates with the inlet and outlet ports in the open position of the valve. Removable sealing means are provided between the bore and the plug for preventing leakage between the inlet and outlet ports and to the outside of the valve. The plug has an opening extending axially inwardly from one or both ends thereof corresponding to the open end or ends of the valve body. The openings are normally closed by closure plugs and serve as storage compartments for replacement parts of the valve. In some forms of the invention a valve operating handle can be threaded into a hole in either closure plug or into a storage compartment itself to serve as an aid in seating or unseating the plug in the valve body.

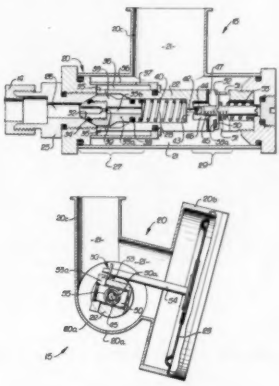
3,783,891
BALANCED REGULATOR SECOND STAGE

Raymond A. Christianson, Inglewood, Calif., assignor to Under Sea Industries, Inc., Compton, Calif.

Filed Mar. 22, 1972, Ser. No. 237,180

Int. Cl. A62b *7/00*; **B63c** *11/16*

U.S. Cl. 137—491 **14 Claims**



A balanced demand valve for use as the regulator second stage of a self contained underwater breathing apparatus. The device includes a primary valve which control the flow of breathable gas from a supply conduit inlet to a mouthpiece outlet chamber. The primary valve operates in response to the pressure differential between the inlet and a control chamber. A pilot valve controls the pressure in the control chamber in response to inhalation demand of the diver as sensed by a diaphragm located in the outlet chamber and linked to the pilot valve poppet. The mechanical advantage of the linkage together with the pneumatic amplifier cooperation of the pilot and primary valves provide sensitive regulator operation supplying breathable gas in close response to inhalation demand.

3,783,892
LONG TIMING, SLOW FLOW DEVICE

Frederick D. Joesting, Park Ridge, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

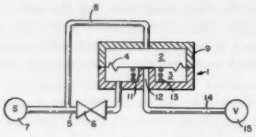
Filed Oct. 3, 1972, Ser. No. 294,737

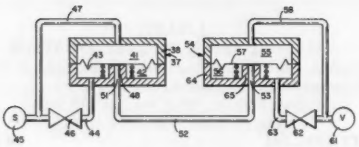
Int. Cl. G05d *7/01*

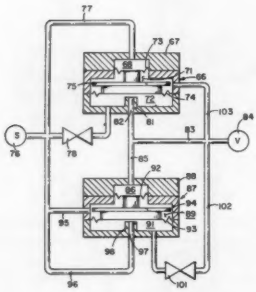
U.S. Cl. 137—493 **14 Claims**

A long timing fluidic device comprises a conventional restriction in a supply conduit, a diaphragm module having a flow chamber in communication with the supply conduit, a valving chamber connected to an output conduit, a control chamber in communication with a third conduit the other end

of which is connected to the supply conduit upstream of said restriction, and a diaphragm or pressure reactor, whereby the







module insures that the pressure drop across the restriction is of a low value.

3,783,893

PIVOTED WEIGHT BIASED VALVE

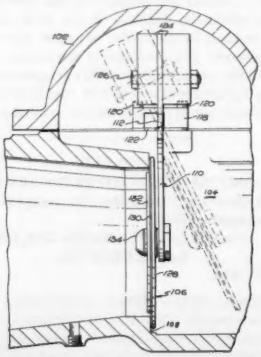
George Robert Davison, Chesterfield, England, assignor to The Bryan Donkin Company Limited, Chesterfield, Derbyshire, England

Filed Nov. 20, 1972, Ser. No. 307,785

Claims priority, application Great Britain, Nov. 26, 1971, 55076/71

Int. Cl. F16k *15/03*

U.S. Cl. 137—527.8 **4 Claims**



A non-return valve having a closure member which pivots on knife-edged bearing portions in contact with flat bearing plates. Aligning means are provided to align the closure member with the valve seat. The valve plate is biased by an upstanding balance weight and a removable domed closure cap is provided to house the balance weight and provide access to the valve.

3,783,894

NON-RETURN VALVES

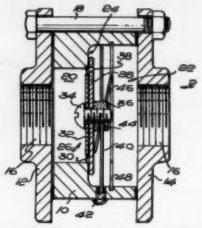
George Robert Davison, Chesterfield, England, assignor to The Bryan Donkin Company Limited, Chesterfield, Derbyshire, England

Filed Nov. 21, 1972, Ser. No. 308,457

Claims priority, application Great Britain, Nov. 26, 1971, 55,074/71

Int. Cl. F16k *15/02*

U.S. Cl. 137—535 **8 Claims**



A non-return valve having a closure member disposed in a casing and supported on pins loosely located at their outer ends in the casing wall so that it can move freely towards or away from a valve seat.

3,783,895

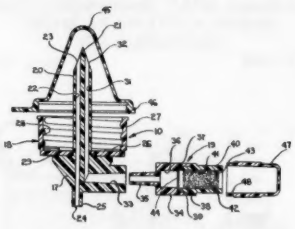
UNIVERSAL PARENTERAL FLUID ADMINISTRATION CONNECTOR

Theodore E. Weichselbaum, St. Louis, Mo., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed May 4, 1971, Ser. No. 140,139

Int. Cl. F16k *45/00*

U.S. Cl. 137—588 **5 Claims**

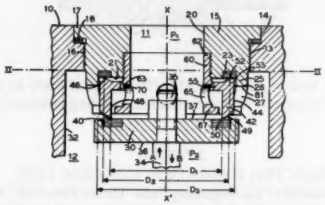


A connector for connecting parenteral fluid administration tubing to any one of a plurality of different parenteral fluid supply containers having different closure means. The connector includes threaded means for engagement with the threaded closure portion of one form of such parenteral fluid supply containers and piercing means for piercing a pierceable closure portion of a different form of such containers. The connector further includes an improved anti-siphoning valve providing for venting of the container during withdrawal of the fluid therefrom while preventing undesirable loss of the fluid through the venting means. The venting means includes means for filtering the venting fluid, such as ambient air.

3,783,896
VALVE MECHANISM FOR THROTTLING A FLOWING FLUID

Raymond Jacquemard, Paris, France, assignor to Compteurs-Schlumberger, Montrouge, France

Filed Mar. 30, 1972, Ser. No. 239,443
Claims priority, application France, Apr. 2, 1971, 7111719
Int. Cl. F16k *1/52*
U.S. Cl. 137—630.14 **10 Claims**



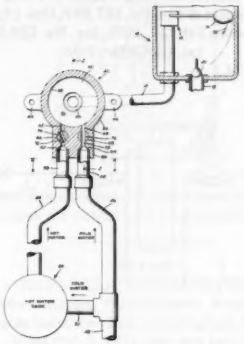
According to an illustrative embodiment, a mechanism is provided for throttling a fluid flowing through an opening in a body between two regions at different pressures. A first and a second throttling flow paths are provided through said opening by means of a valve member movable between a first and a second position. First seal means are provided around this opening for sealingly engaging such valve member in the first position thereof to close the first flow path. This first flow path is opened by movement of the valve member toward its second position for throttling a first flow of fluid. Means movable with the valve member between the first and second positions thereof are also provided for controlling the displacement of the valve member, the pressure difference between the two regions acting to urge the valve member into sealing engagement with second seat means carried by the movable controlling means, between the first and up to the second position of the valve member. A tubular extension surrounding the opening has lateral throttling apertures formed therein the lateral wall of the valve member is arranged to progressively uncover larger portions of the apertures when moving from first to second position, thus varying the section of the first flow path in a non-linear manner with the displacement of the valve member. Abutment means are provided to maintain the valve member in its second position whereby the second flow path opens upon movement of the controlling means with respect to the valve member in the section position, the flow throttling section of such second flow path varying linearly with the latter movement.

3,783,897
WARM LIQUID SUPPLY SYSTEM FOR RESERVOIR AND MIXING VALVE THEREFOR

Claude L. Pegg, 149 Grant St., Wabash, Ind., and John L. Pegg, both of Wabash, Ind., assignors to Claude L. Pegg, by said John L. Pegg

Filed Aug. 11, 1971, Ser. No. 170,820
Int. Cl. A47k *17/00*; E03d *3/00*
U.S. Cl. 137—564 **11 Claims**

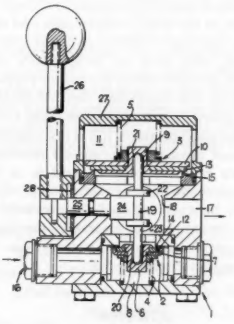
A system for supplying warm liquid to a reservoir, such as a toilet tank. A mixing chamber is provided and a first conduit couples the mixing chamber to the reservoir for supplying warm liquid thereto, the first conduit having a valve therein for opening and closing the same. Second and third conduits are respectively coupled to the mixing chamber for respectively supplying hot and cold liquid thereto, a source of a cold liquid under pressure being coupled to the second conduit and heating means coupling the source to the third conduit for continuously heating the liquid supplied to the mixing chamber. The heating means is positioned at a lower level than the mixing chamber whereby liquid recirculates from the third conduit to the second conduit through the mixing chamber when the valve is closed thereby continuously providing warm liquid in the mixing chamber. Each of the second and third conduits has a restriction therein whereby the pressure in the mixing chamber is lower than in the second and third conduits upstream from the restrictions thereby causing mixing of the hot and cold liquid in the mixing chamber when the valve is open, the restrictions also limiting the recirculation thereby preventing material heating of the liquid in the second conduit. Each of the restrictions has a valve therein selectively actuable between open and closed positions.



3,783,898
FLUID FLOW CONTROL DEVICES

Douglas Frederick Kirkman, Ickenham, England, assignor to I. V. Pressure Controllers Limited, Feltham, Middlesex, England

Filed Apr. 26, 1972, Ser. No. 247,744
Claims priority, application Great Britain, Dec. 15, 1971, 58,300/71
Int. Cl. F16k *31/00*
U.S. Cl. 137—596.2 **8 Claims**



A fluid flow control device having first and second valve means biassed normally towards closed positions, and control means. The control means is operable, when the device is connected in a fluid flow path, either to displace the first valve means against its bias into an open position to permit fluid to flow through the device from an inlet side to an outlet side thereof, or to displace the second valve means against its bias into an open position to vent the outlet side of the device. The second valve means is also openable independently of the control means under the action of excess pressure on the outlet side of the device to relieve this excess pressure.

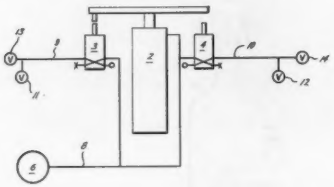
3,783,899
VALVE OPERATOR

John H. Fowler, and Charles F. Johnson, both of Houston, Tex., assignors to Rockwell International Corporation, Houston, Tex.

Continuation of Ser. No. 72,8 3, Sept. 16, 1970, which is a continuation of Ser. No. 705,876, Jan. 3, 1968, which is a continuation-in-part of Ser. No. 587,892, Oct. 19, 1966. This application Feb. 24, 1972, Ser. No. 229,229

Int. Cl. G05b *19/06*

U.S. Cl. 137—624.2 **19 Claims**



A pilot control system for selectively activating a plurality of hydraulically operated devices with power supplied from a remote source through a single conduit. The control system comprises a sequencing unit with a case enclosing a rotating and reciprocating stem. Attached to the end of the stem is an actuating plate which on rotation of the stem registers with various control devices and on reciprocating movement of the stem engages one or more of these control devices to permit pressure from the power source to activate one or more of the hydraulically operated devices. To impart rotational and reciprocal motion to the stem an annular piston is non-rotatingly and slidingly received in an annular space between the stem and case. This annular space is connected to the single conduit from the power source. The stem is provided with a continuous slot traversing its circumference and having upper and lower extremities connected by inclined channels to give a sawtooth-like appearance. The annular piston has a projection thereon which engages the stem slot. By applying pressure to the annular piston, which is spring biased against movement, the piston may be reciprocally moved causing the stem to rotate due to the slot configuration and the engaging piston projection. The stem, which is also spring biased against reciprocal motion, may then be reciprocally moved by a further increase in pressure since the piston projection lies at one extremity of the saw-tooth-like slot. Alternate increases and decreases in pressure will cause complete rotation of the stem due to the slot configuration. If it is not desired to actuate a particular control device by reciprocal movement of the stem, intermediate pressure only is used to re-register the plate engaging device, the higher pressure step, which initiates reciprocal motion, being eliminated. As previously stated, all control devices, hydraulically operated devices, and the sequencing unit are supplied with power from the remote power source through a single conduit.

3,783,900
STOP COCK

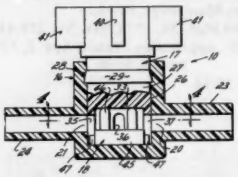
Charles C. Waldbillig, Columbus, Ohio, assignor to Medex, Inc., Hilliard, Ohio

Filed June 5, 1972, Ser. No. 259,945

Int. Cl. F16k *11/00*

U.S. Cl. 137—625.47 **5 Claims**

A stop cock comprising a cup-shaped body having three ports and associated spigots formed at right angles to one another, and a plug disposed in the body and sealed thereto above said ports. The plug has a downwardly depending, generally cylindrical wall which defines a recess in the bottom of the plug, the wall being slotted to provide openings alignable with the ports. A stiffening element is inserted in the recess to provide assurance of sufficient radially outward pressure of



said walls against the internal surface of said body to seal off said ports when the plug is rotated to a sealing position.

3,783,901
ELECTRO HYDRAULIC CONTROL UNIT

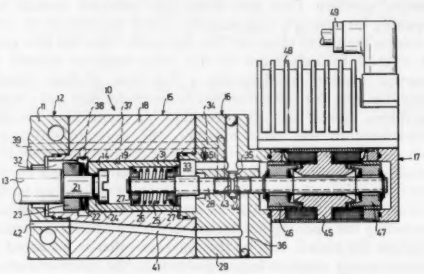
Klaus Schneider, Ludwigsburg, and Heinz Flaschar, Asperg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 13, 1973, Ser. No. 340,823

Claims priority, application Germany, Mar. 20, 1972, P 22 13 439.0

Int. Cl. F16k *11/07, 31/02*

U.S. Cl. 137—625.64 **15 Claims**



A fluid-pressure controlled piston element is shiftable in a housing element and a valve, including a pre-selecting member movable from a rest position for controlling the flow of pressure fluid and preselecting the position of the piston element, is provided. A solenoid moves the preselecting member from its rest position, and the solenoid and valve are both connected with one of the elements whereas a restoring device connects the preselecting member with the other of the elements and permanently urges the preselecting member to its rest position.

3,783,902
FLUIDIC SURFACE DEVICE AND NOZZLE SYSTEM FOR THE FORMATION OF JETS IN THE DEVICE

Arnulf Schwarz; Gerhard Konig, and Manfred Pieloth, all of Dresden, Germany, assignors to Veb Kombinat Mess-und Regelungstechnik Dessau, Dessau, Germany

Filed Mar. 27, 1972, Ser. No. 238,260

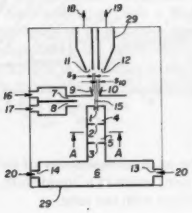
Claims priority, application Germany, Apr. 5, 1971, WP F 15 d/ 154 207

Int. Cl. F15c *1/00*

U.S. Cl. 137—803 **10 Claims**

A fluidic circuit element includes a nozzle assembly in the form of a nozzle supplied from a supply source of fluid by way of one or more throttles separated from each other and from the nozzle by intermediate chambers. The spacing between the throttles and between the last throttle and nozzle are less

than the smallest transverse dimensions of the throttles. A symmetrical jet is produced by a single arrangement of this type, or alternatively an asymmetrical jet may be produced by

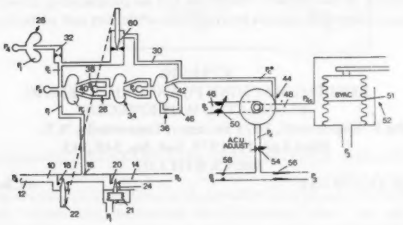


employing a similar series of throttles and outlet nozzle of larger dimensions cooperating with the first system. The noz zle system is shown and disclosed in combination with a wall attachment device.

3,783,903
FLUIDIC PRESSURE RATIO CONTROL

Hugh Francis Cantwell, Derby, England, assignor to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed June 7, 1971, Ser. No. 150,705
Claims priority, application Great Britain, June 16, 1970, 29,003/70
Int. Cl. F15c 1/12
U.S. Cl. 137—805 **11 Claims**



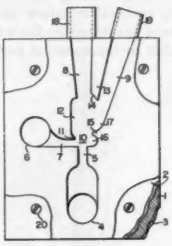
This invention relates to a fluidic apparatus for controlling the ratio between two variables, namely, the inlet and outlet pressures of the compressor of a gas turbine engine, through the use of error detectors, sensing means and amplifier means all for the purpose of producing a control pressure for the fluidic means, which also incorporates feedback means in one of its stages.

3,783,904
FLUID AMPLIFIER

Keizo Amagami, Neyagawa; Masaru Nishijyo, Yamatokoriyama; Yutaka Takahashi, and Motoyuki Nawa, both of Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 1, 1972, Ser. No. 277,132
Int. Cl. F15c 1/16
U.S. Cl. 137—811 **10 Claims**

A pure fluid amplifier with a high output power and a high switching gain is provided in which vortexes are generated in

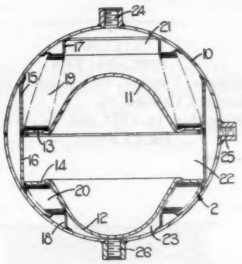


an interaction region so that the high output power may be obtained even when the output load is increased.

3,783,905
HYDRAULIC ACCUMULATOR

Harry Simister Bottoms, Warwickshire, England, assignor to Joseph Lucas Industries Ltd., Birmingham, England

Filed Oct. 5, 1971, Ser. No. 186,723
Claims priority, application Great Britain, Oct. 8, 1970, 47,832/70
Int. Cl. F16l 55/04
U.S. Cl. 138—30 **10 Claims**



A hydraulic accumulator has a chamber divided into compartments by a slidable member and a bellows. The bellows is provided at its outer and inner edges with axially extending portions which nest together when the bellows is compressed by discharge of hydraulic fluid from one of the compartments, whereby relative lateral movement of the bellows segments is prevented.

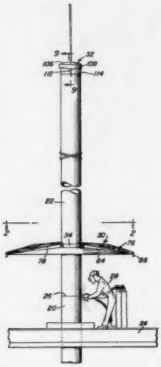
3,783,906
APPARATUS FOR WELDING VERTICAL MEMBERS DURING INCLEMENT WEATHER

Lee J. Matherne, 2717 W. Main St., Houma, La.

Filed June 23, 1972, Ser. No. 265,675
Int. Cl. F16l 55/00
U.S. Cl. 138—103 **7 Claims**

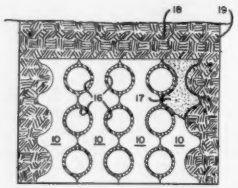
A canopy for mounting on the external surface of the upper member of a pair of vertically aligned and abutting members to protect the juncture area between the members while being butt welded to protect the weld from rain, snow, hail, sleet and the like which causes crystallization of the heated metal due to rapid cooling of certain areas when contacted by rain and the like. The vertical members are pipes such as employed in oil wells such as conductor pipes, casings and the like with the upper end of the upper pipe being provided with a closure cap to prevent entry of rain and the like into the interior of the pipe thereby protecting both the interior and exterior of the

pipes to enable effective continuance of the welding operation and installation of the pipe into the oil well during periods of inclement weather. In practicing the method and employing the apparatus, any residual moisture on the pipe is quickly dried due to the heat generated by the welding operation and the canopy is sealed to the external periphery of the upper



pipe above the juncture area and is of sufficient dimension to enable normal welding operations thereby eliminating the necessity of shutting down operations during periods of rain, hail, sleet, snow and the like.

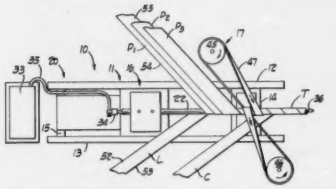
3,783,907
PIPE SPACERS
Harvey G. Skinner, Latrobe, Pa., assignor to Westmoreland Plastics Company, Latrobe, Pa.
Filed Mar. 16, 1972, Ser. No. 235,360
Int. Cl. F16l *3/10*
U.S. Cl. 138—106 **4 Claims**



A pipe spacer is provided of blow molded plastic having two opposite sides with corresponding semi-cylindrical recesses therein corresponding to one half of the circumference of a pipe to be spaced.

3,783,908
HELICALLY WOUND TUBES
Paul W. Stump, North Olmsted; James A. Huber, Strongsville, and John M. Lipinski, Cleveland, all of Ohio, assignors to Clevepak Corporation, Cleveland, Ohio
Division of Ser. No. 172,010, Aug. 16, 1971, abandoned, which is a division of Ser. No. 842,298, July 16, 1969, Pat. No. 3,620,869. This application Sept. 20, 1972, Ser. No. 290,579
Int. Cl. F16l *9/16*
U.S. Cl. 138—144 **5 Claims**

A helically wound tube comprised of sheet-like plies including a liner and a plurality of body plies. The liner and a first surrounding body ply are interwoven along a helical butt joint defined by adjacent edges of the surrounding body ply, and the liner forms a helical lap joint. The tube is continuously formed and an interior protective coating is concurrently ap-

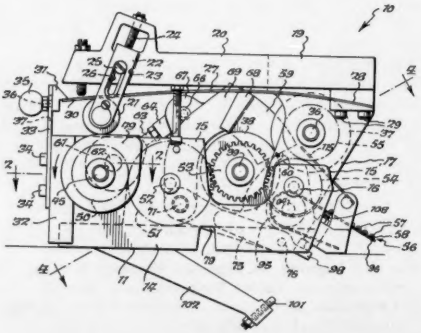


plied to the tube as an airless spray of coating material comprising 100 per cent solids in a liquid state, which hardens substantially on contact with the tube.

3,783,909
TREATING SKINNED ANIMAL CARCASSES
Beverly E. Williams, P. O. Box 299, San Mateo, Calif.
Filed Sept. 22, 1971, Ser. No. 182,846
Int. Cl. D03d *15/00*
U.S. Cl. 139—426 **4 Claims**

Treating skinned animal carcasses such as beef by using shrouds in which the individual yarns comprise a blend of ramie fiber and a synthetic fiber, the ramie fiber comprising between 50 and 65 percent and the synthetic fiber comprising between 35 and 50 percent. The preferred synthetic is a polyester filament. The blended yarn in the shroud is characterized by the fact that the filaments, both the ramie and the polyester average six inches in length and are twisted together approximately 25 turns per inch. In use, the shroud is soaked in brine and is applied to the carcass while soaking wet and is tightly skewered to the carcass promptly after slaughter and skinning. The shrouded carcass is then put in the cooler for up to about 24 hours, during which time the shroud tends to lose its moisture content before being pulled off the carcass. The shroud of the present invention has an outstanding combination of strength against tearing both while wet and while dry.

3,783,910
BENDING MACHINE FOR STRAIGHTENING ELONGATED WORKPIECES
John F. Kopczynski, 1671 Sweeney, Tonawanda, N.Y.
Filed Apr. 19, 1972, Ser. No. 245,543
Int. Cl. B21f *1/02*
U.S. Cl. 140—147 **6 Claims**



A machine for rolling elongated workpieces by inserting the workpiece between two spaced parallel series of rolls and holding the workpiece in position in a work zone by means of

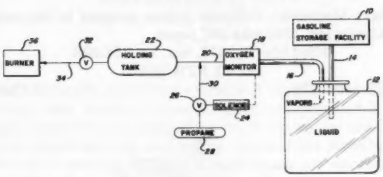
two opposed series of fingers which cause the workpiece to be retained substantially in a plane connecting the centers of rotation of the spaced series of rolls, the two series of fingers approaching the work zone from opposite directions simultaneously because they are driven by a differential type of linkage, with one of the series of fingers comprising carrier fingers which carry the straightened workpiece from the work zone and deposit it on a conveyor, and a toggle mechanism mounting the carrier fingers so as to cause them to be moved to a position, after depositing the workpiece, which permits them to clear the workpiece in returning to the work zone, and thereafter assume a carrying position for carrying a subsequent workpiece to the conveyor.

3,783,911

METHOD FOR SAFELY COLLECTING HYDROCARBON VAPORS PRESENT DURING LOADING OR UNLOADING OF FLAMMABLE FUELS

Howard W. Husa, Park Forest, and Irwin Ginsburgh, Morton Grove, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed July 28, 1972, Ser. No. 276,132
Int. Cl. B65b *1/30*
U.S. Cl. 141—11 **3 Claims**



Disclosed is a method for collecting hydrocarbon vapors before they are dispersed in the atmosphere surrounding a site where loading or unloading of flammable fuels occur. The collected vapors are monitored to determine when the air-hydrocarbon vapor mixture is near or in the combustible range. When it is determined that the mixture is near or in the combustible range, a hydrocarbon gas such as propane is injected into the mixture to remove the danger of explosion or fire. The collected vapors are held in a holding tank and, preferably, are periodically burned.

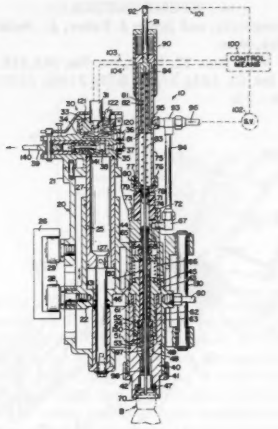
3,783,912

BEVERAGE CONTAINER FILLING HEAD

Kenneth F. Friendship, Akron, Ohio, assignor to A-T-O Inc., Cleveland, Ohio

Filed Dec. 30, 1968, Ser. No. 787,700
Int. Cl. B65b *31/00*
U.S. Cl. 141—46 **3 Claims**

A beverage container filling head including a valve means is provided for controlling flow of fluid through the filling head and an electrically conductive probe extends longitudinally of the filling head. The probe is adapted to be moved an adjustable distance as a separate member from a retracted position within the filling head to an extended position where it projects from the filling head to contact liquid in an associated bottle and control termination of the bottle filling action.

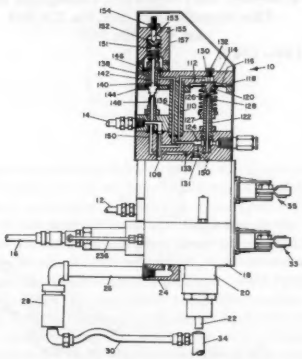


3,783,913

CONTROL FOR CONTAINER FILLING MACHINE

William H. Trusselle, Braintree, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.

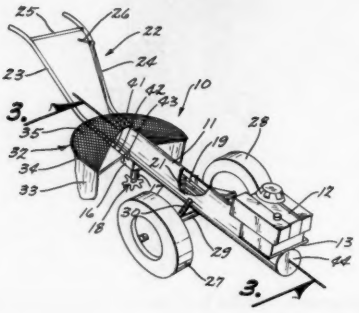
Filed July 8, 1971, Ser. No. 160,840
Int. Cl. B65b *31/00, 57/14*
U.S. Cl. 141—46 **15 Claims**



A control circuit for filling apparatus of the kind wherein there is a nozzle through which liquid is delivered to a container and a filling valve for controlling flow through the nozzle. The circuit includes valve means that supplies sensing pressure to a sensing tube, an exhaust valve through which the pressure in the circuit is adapted to be exhausted to below operating pressure to terminate the filling operation by closing the filling valve in the nozzle and a diaphragm responsive to back pressure developed in the sensing tube to effect operation of the exhaust valve. There is also in the circuit, valve

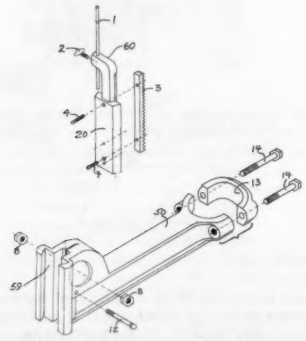
means for at times terminating the flow of sensing air and injecting high-pressure air into the sensing tube to clear it.

3,783,914
STUMP CUTTER
James T. Daugherty, and James J. Baber, Jr., both of P.O. Box 668, Valley, Nebr.
Filed June 22, 1972, Ser. No. 265,418
Int. Cl. A01g 23/06; B27g 21/00, 13/08
U.S. Cl. 144—2 N 5 Claims



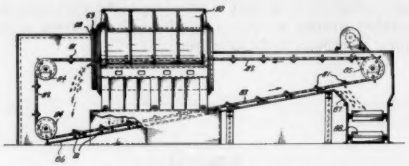
A manually operated stump cutter is disclosed including an elongated tubular frame member with an engine mounted at one end and a cutting means at the other. An operator handle extends from the other end and a shield assembly protects the operator. The tubular frame member is supported by a pair of wheels on a transverse axle midway of the tubular frame member.

3,783,915
ROUTER OVERARM ATTACHMENT
Norman E. Bryden, 2407 Arden Dr., Champaign, Ill.
Filed May 30, 1972, Ser. No. 258,045
Int. Cl. B27c 5/10
U.S. Cl. 144—134 B 7 Claims



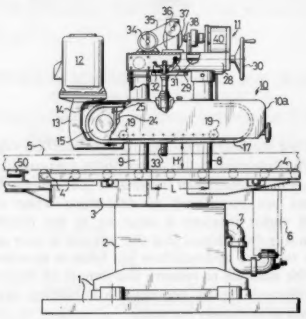
A device which will contain an electric router in a detachable manner and provide for a controlled vertical movement of the router relative to a work surface. The device is detachably mounted to a round pipe column or spindle. Affixed in this manner, the tool is used for cutting wood, and other materials.

3,783,916
CHIPPER CHIP-REMOVING STRUCTURE
Thomas W. Nicholson; Ray B. Jorgensen, and Stanley Donald Vanek, all of Seattle, Wash., assignors to Nicholson Manufacturing Company, Seattle, Wash.
Continuation-in-part of Ser. No. 883,038, Dec. 8, 1969, Pat. No. 3,661,192. This application May 2, 1972, Ser. No. 249,721
Int. Cl. B27l 11/02
U.S. Cl. 144—172 6 Claims



A rotating chipping drum is mounted in a hollow body with a portion of its periphery exposed to a chipping chamber for holding log sections to be chipped. Cutting bits are mounted in apertures of the chipping drum so that chips cut from the log section enter the interior of the drum. The chips are removed from the interior of the drum by a conveyor of the screw type, of the belt type, or of the chain type, extending partially or entirely through the interior of the drum. The rotative axis of the chipping drum may be inclined to urge a log section toward one end of the chipping chamber.

3,783,917
WOOD SLICER MACHINE
Nakataro Mochizuki, Shizuoka, Japan, assignor to Marunaka Tekkosho Inc., Shizuoka-shi, Japan
Filed May 9, 1972, Ser. No. 251,698
Int. Cl. B27l 5/06
U.S. Cl. 144—175 4 Claims



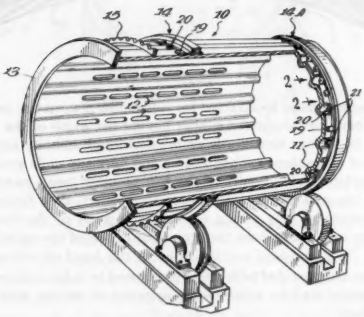
A wood stock slicer machine for slicing a wood stock having a bar, pillar, thick plate or the like, cut by cut into thin sliced sheets having preferably a thickness of the order of 0.2 – 2.0 mm. by performing the slicing operation in the axial direction and generally in a parallel direction to the orientation of the wood fibers of the stock.

The machine is provided with a stationary table in which a cutter unit is adjustably provided, with said unit having a cutter knife with its cutting edge arranged in an acute angle relative to the travelling direction of the stock on the table.

Above the table, there is provided a stock feed unit, the positional level of the latter unit relative to said table being adjustable by a manipulating unit mechanically coupled with said stock feed unit. The sliced product is discharged downwardly through a discharge opening formed through said

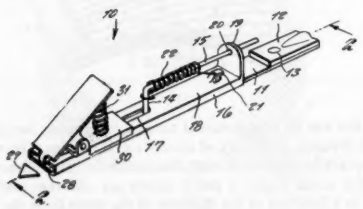
table and partially defined by said cutting edge. The stock feed unit includes a rotatable belt which is resiliently pressurized at its lower side run, so as to compensate for possible undulations for positive and accurate force-feed of the stock by keeping pressure contact of said belt wi... the upper surface thereof.

3,783,918
ROTATING DRUM WITH ELASTOMERIC PAD-MOUNTED SUPPORTING RINGS
Arthur R. Simpson, Riverside, and Frank S. Egloff, LaGrange, both of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.
Filed Feb. 16, 1972, Ser. No. 226,788
Int. Cl. B27l *1/00*
U.S. Cl. 144—208 B **7 Claims**



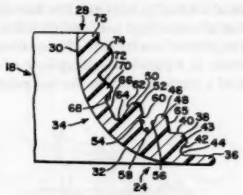
A horizontally positioned cylindrical drum, such as for debarking logs, a pair of spaced-apart circumferential metal rings located longitudinally along the drum, and an elastomeric pad means between each of the rings and the drum holding the rings in position thereon. The drum can be supported by, and rotate on, trunnion wheels.

3,783,919
GLAZIER'S POINT HOLDER
Julian Torres, c/o George Specter, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y.
Filed Apr. 25, 1972, Ser. No. 247,403
Int. Cl. B25c *3/00*
U.S. Cl. 145—46 **2 Claims**



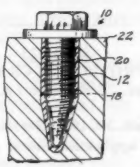
A tool for holding a glazier's point in position for driving into a window frame in an easy manner; the device consisting of a base unit around which there is a slidable frame for supporting in a correct driving position a glazier point located in front thereof, so that when the base unit is hit with a hammer, the point is properly installed into the window frame.

3,783,920
CONTAINER AND CLOSURE THEREFOR
Roy J. Weikert, c/o General Films, Inc., Covington, Ohio
Filed June 20, 1972, Ser. No. 264,488
Int. Cl. B65d *33/16, 39/00*
U.S. Cl. 150—8 **20 Claims**



A bag having a relatively large diameter, closure or valve, the components of which are formed in molds using a one piece mold cavity. The three components of the valve include a base having a flange positioned within the bag and a neck extending through an opening in the bag, a collar which clamps the bag to the base and a cap which forms a seal with the neck of the base. The collar and base have complementary, vertically extending beads to grip the bag material and the cap has a dome shaped central portion which seals against the inner surface of the neck.

3,783,921
SCREW FASTENER AND METHOD OF APPLYING SAME
David P. Wagner, Elmhurst, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Apr. 1, 1971, Ser. No. 130,199
Int. Cl. F16b *37/04*
U.S. Cl. 151—41.7 **3 Claims**

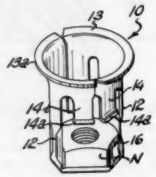


The present invention relates generally to improvements in screw type fasteners and to novel methods of applying such fasteners to a preformed aperture in a workpiece. The embodiments of the present invention disclosed in the accompanying drawing includes a headed screw member, the entering extremity of which is encapsulated by an adhesive having the functional characteristics of a partially cured epoxy resin. Interposed between the threaded peripheral surface of the screw shank and the aforesaid adhesive is a release coating to prevent the establishment of a bond between the adhesive and the peripheral screw surface when said adhesive is completely cured or solidified within a work aperture.

3,783,922
BLIND MOUNTING FASTENER
Stephen Petrus, Parma, Ohio, assignor to Eaton Corporation, Cleveland, Ohio
Filed Sept. 5, 1972, Ser. No. 286,511
Int. Cl. F16b *13/06*
U.S. Cl. 151—41.74 **9 Claims**

A caged nut or bolt for assembly and retention preferably in a round mounting hole in a blind panel. The retainer is formed integrally from a flat blank and has a base with central aper-

ture for bolt clearance and a pair of integral leg portions extending outwardly from the base in cupped arrangement. The free ends of the legs have transverse portions formed in semicircular configuration with the edges flanged radially outwardly. Each of the transverse portions has a pair of integral lugs extending therefrom toward the base with the ends of the lugs flared outwardly. Integral outwardly extending tabs are provided on the base in cupped arrangement for retaining a nut or bolt head centrally between the tab and leg portions. Portions of the tabs and legs are chamfered or sized near the base portion to permit insertion of the retainer, with a nut or bolt head therein, in a panel mounting hole of a diameter substantially that of a circle including the nut points. Where a nut



is caged, a bolt is inserted through the mounting hole, threaded into the nut, and tightened to draw the nut away from the base portion toward the panel undersurface. As the bolt is tightened, the leg and lug portions of the retainer are wedged between the edge faces of the nut and the wall of the mounting hole, and the nut is thereby secured in the mounting hole. Where a bolt is used, the head of the bolt is received between the leg portions and the shank extends outwardly of the retainer between the radially flanged portion. A nut is threaded over the bolt to draw the bolt head away from the base portion toward the panel undersurface wedging the leg portion between the wall of the mounting hole and the bolt head.

3,783,923

PROTECTIVE CHAINS

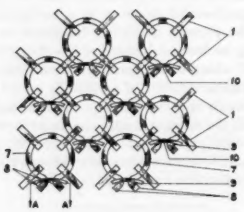
Hans Otto Dohmeier, 24 Shipston Ln., Johannesburg, South Africa

Filed Jan. 19, 1972, Ser. No. 218,920

Claims priority, application South Africa, Jan. 28, 1971, 71/0553

Int. Cl. B60c *27/00*

U.S. Cl. 152—243 **9 Claims**



Chain comprising links connected together by resilient steel loops threaded through apertures in the links and with the ends of the loops closed by means of a locking member located on the ends of a loop when it is in a resiliently deformed condition such that the release of the loop after location of the locking member thereon causes interlocking between the locking member and the loop end.

3,783,924

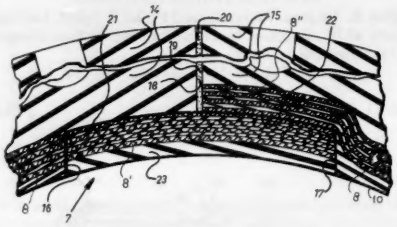
REPLACEMENT TREAD BAND FOR RETREADING A WORN TIRE

Guy Pelletier, Ville d'Anjou, Quebec, Canada, assignor to Rockland Industries Ltd., Kingsbury, Quebec, Canada

Filed Feb. 7, 1972, Ser. No. 224,001

Int. Cl. B60c *9/18*

U.S. Cl. 152—330 **4 Claims**



A replacement tread band for retreading a worn tire including a band of vulcanized rubber having the width of the tread band of a worn tire, cords embedded longitudinally into the band of vulcanized rubber and having opposite ends arranged to overlap longitudinally of the replacement tread band of a worn tire and to be secured one to another, then forming a reinforcement ring acting against separation of the band of vulcanized rubber from the tire under action of the centrifugal force. The opposite end portions of the band of vulvanized rubber are provided with cutouts adapted to lodge said ends of said cords and an elastomeric material to secure said ends together.

3,783,925

TIRE HAVING BI-BIASED CARCASS

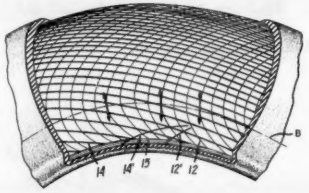
Jacques Boileau, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand, France

Filed Mar. 2, 1972, Ser. No. 231,105

Claims priority, application France, Mar. 8, 1971, 71.08006; Jan. 14, 1972, 72.01371

Int. Cl. B60c *9/06*

U.S. Cl. 152—356 **13 Claims**



A tire has an asymmetrical carcass comprising two plies of cords forming a network of quadrilateral meshes. The sides of the quadrilaterals form with the circumferential direction of the tire acute angles α and β which are different and which vary as a function of the distance of the mesh from the axis of the tire. The angle α is larger than the angle β and varies, between any two points located at different distances from the axis, more than does the angle β. In manufacturing the tire by turning the edges of the two plies around bead wires on a building drum and then shaping the assembly into the form of a tire, at least one of the bead wires is permitted to rotate about the axis of the tire so that the meshes rotate about normals to the carcass.

3,783,926
TIRE HAVING TWO-PLY CARCASS MERGING INTO ONE PLY

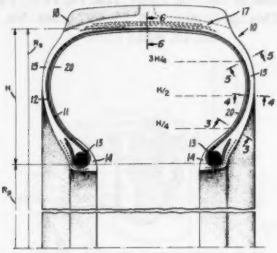
Yves Jacques de Zarauz, Le Cendre, France, assignor to Compagnie Generale Des Etablissements Michelin, raison Sociale Michelin & Cie, Clermont-Ferrand, France

Filed Apr. 26, 1972, Ser. No. 247,780

Claims priority, application France, Apr. 28, 1971, 71.15304

Int. Cl. B60c *9/06*

U.S. Cl. 152—356 **7 Claims**



A tire carcass is formed of a pair of plies adjacent to each other and extending through the tire from one bead to the other. Each ply comprises cords arranged with the same pitch and along the same direction, and the cords of each ply are staggered with respect to those of the other by half the pitch. The cords of the two plies, in regions of the carcass close to the beads, are located respectively at different distances from the inner wall of the tire. Successive cords of each ply, in regions of the carcass between the midheights of the two sidewalls, are inserted between adjacent cords of the other ply, so that the cords of the two plies, in regions of the carcass between the midheights of the two sidewalls, are located substantially at the same distance from the inner wall of the tire.

3,783,927
TIRE AND RIM STRUCTURE FOR CONSTRUCTION EQUIPMENT

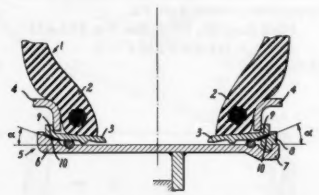
Henri Verdier, Beauregard-L'Eveque, France, assignor to Compagnie Generale Des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand, France

Filed Oct. 20, 1971, Ser. No. 190,892

Claims priority, application France, Oct. 20, 1970, 70.37907

Int. Cl. B60b *25/10*

U.S. Cl. 152—409 **4 Claims**



Each bead of a large pneumatic tire has permanently connected to its bottom an annular metal part serving as a bead seat and formed with a conical bearing surface. The rim for the tire has a fixed or movable axial stop member for each bead. Each axial stop member is formed with a conical stop surface, and the conical bearing surfaces are respectively engageable with the conical stop surfaces. Each pair of engaged bearing and stop surfaces is inclined with respect to the common axis of the tire and rim by an angle within the range of 10° to 30°. The structure prevents the tire and rim from slipping in rotation with respect to each other and is particularly adapted for use on construction equipment and the like.

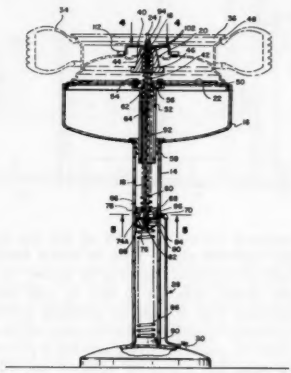
3,783,928
STRUCTURE FOR MOUNTING TIRES ON WIDE RIMS

Robert B. Lee, 4925 N. 73rd St., Scottsdale, Ariz.

Filed Sept. 14, 1972, Ser. No. 289,160

Int. Cl. B60c *25/12*

U.S. Cl. 157—1.1 **7 Claims**



A pneumatic tire mounting device for mounting pneumatic tires on wheel rims, and more particularly for mounting tubeless pneumatic automotive tires on wheel rims of substantially greater than normal width.

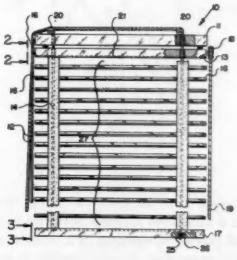
3,783,929
VENETIAN BLIND

Andrew Logar, 555 W. Middlefield Rd., Mountainview, Calif.

Filed Mar. 6, 1972, Ser. No. 231,878

Int. Cl. E06b *9/30*

U.S. Cl. 160—168 **13 Claims**



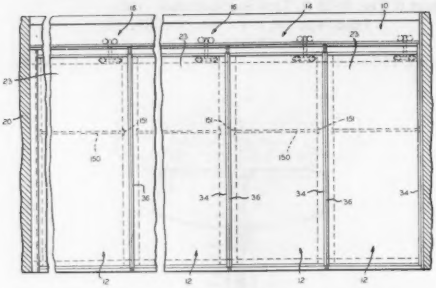
A venetian blind slat webbing unit is constructed for ease of replaceability. This construction replaceability of the slat unit may serve as an alternative to arduous cleaning of the slats and webbing of dirty blinds.

3,783,930

TRAIN OPERATED FOLDING PARTITION

Charles E. Williams, Janesville, Wis., assignor to Hough Manufacturing Corporation, Janesville, Wis.

Filed Apr. 5, 1972, Ser. No. 241,356
Int. Cl. E05d 15/26
U.S. Cl. 160—199 13 Claims



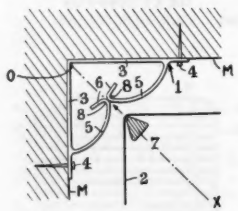
A train operated folding partition of the top supported, center folding, operable panel, type, in which each panel is supported from an overhead trackway by its own carrier, and the panels are hinged together in side by side relation for movement between wall forming or unfolded positions, and wall folded or stacked positions, wherein each carrier is free to move relative to the panel it carries between a position at the center of the panel and a position adjacent one edge of the panel, as the panels are moved between their stacked and the wall forming positions.

3,783,931

DEVICE FOR FIXING A COVERING SHEET INSIDE A DIHEDRON FORMED BY TWO PERPENDICULAR SURFACES

Marcel Assael, 12 Place Maurice Gillet, Brest, France

Filed Feb. 12, 1973, Ser. No. 331,858
Claims priority, application France, Feb. 15, 1972, 7204992; May 18, 1972, 7217817
Int. Cl. A47h 23/00, 13/00
U.S. Cl. 160—327 6 Claims



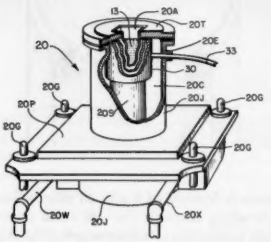
Device for fixing one or two covering sheets, such as hangings, inside a dihedron formed between two perpendicular surfaces, said device consisting of a section member comprising two wings extending at right angles to each other and adapted to be secured to the corresponding perpendicular surfaces, respectively. Said wings carry inside the angle or corner formed therebetween a pair of resilient blades projecting towards each other and having their ends curved or bent towards the apex of the angle formed by said wings, these wings contacting substantially each other in their inoperative or unstressed condition and carrying at their aforesaid ends inturned lips extending substantially at right angles to the bisectrix of the angle formed between said wings, so as to constitute means for efficiently retaining an extra-thickness of material formed along the marginal portion of the covering sheet to be fixed in position.

3,783,932

METHOD OF CONTROLLING MOLTEN METAL-HEIGHT IN CONTINUOUS CASTING

Jack R. Crowell, Cedar Lake, Ind.; James R. Tomashek, Wood Dale, and Donald H. Ward, Glen Ellyn, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 3,421, Jan. 16, 1970, Pat. No. 3,670,801. This application Oct. 15, 1971, Ser. No. 189,569
Int. Cl. B22d 11/00
U.S. Cl. 164—4 1 Claim



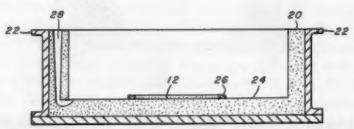
A method of controlling the height of molten metal in a continuous casting system of the type having a mold unit having a generally vertical, integral and electrically conductive form, which form defines a shaping surface and into which form molten metal is poured and from which form a continuous billet is produced, and a cooling jacket about said form in which an electrically conducting coolant is circulated from which unit a continuous billet is extracted by a drive system therefor, comprising the steps of: providing an inductance level detector; positioning the detector in said jacket adjacent to but outside of the form; developing a time-varying magnetic field employing the inductance level detector positioned within the mold jacket and adjacent to the core; sensing the magnetic field strength of the detector as affected by the height of molten metal in the form, and controlling the drive system to counter changes in the level of molten metal in the mold form so as to tend to maintain that level at or about a predetermined desirable level.

3,783,933

METHOD OF MAKING AN INGOT MOLD STOOL

Verne B. Leedy, Palos Heights, Ill., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 20, 1971, Ser. No. 173,435
Int. Cl. B22d 27/18
U.S. Cl. 164—58 4 Claims



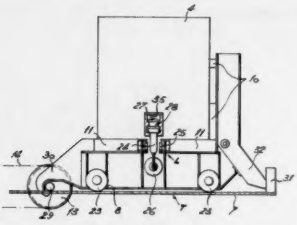
A cast iron ingot mold stool having a coating of granulated iron oxide particles fused into the upper surface thereof to prevent cast ingots from sticking thereto.

3,783,934

APPARATUS FOR REPLACING THE ROLLER GUIDE SECTIONS OF THE STRAND GUIDING ASSEMBLIES OF CONTINUOUS CASTING PLANTS

Karl-Heinz Golde, am Kleinen Rahm 61, Ratingen, and Ernst Schuler, Feldstrasse 47, Dusseldorf, both of Germany

Filed Oct. 29, 1971, Ser. No. 193,686
Claims priority, application Germany, Nov. 2, 1970, P 20 53 755.5
Int. Cl. B22d 11/12
U.S. Cl. 164—282 7 Claims



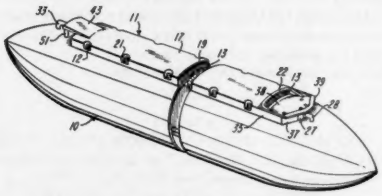
An apparatus for replacing the roller guide sections of the strand guiding assemblies of continuous casting plants which embodies a carriage movably guided at a trackway located externally of its associated strand guide assembly. A pair of rails forming each trackway extends along each such strand guide assembly. This carriage contains supporting surfaces for the individual strand guide sections of the strand guide assemblies. According to important aspects of the invention the carriage can be commonly employed for servicing the strand guide assemblies of multiple continuously cast strands. This common carriage is designed for selective shifting to each of the rail pairs of each of the trackways associated with each strand guide assembly.

3,783,935

SURFACE COOLER

Carl E. Simmons, and Joseph F. Fernandes, both of Dayton, Ohio, assignors to United Aircraft Products, Inc., Dayton, Ohio

Filed May 30, 1972, Ser. No. 258,127
Int. Cl. B60h 3/00
U.S. Cl. 165—44 12 Claims



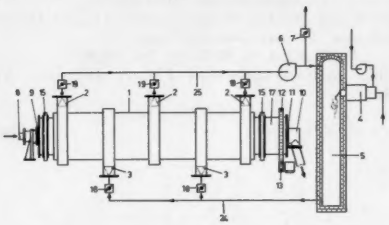
A surface cooler for interposing in ram air or the like. Aerodynamic devices at the leading end of the cooler capture high energy air from the free air stream outwardly of the cooler mounting surface and divert the more stagnant air at the mounting surface away from the cooler inlet, the function being to reject heat to this captured air from a fluid used as a coolant in a location remote from the cooler. At the trailing end of the cooler other aerodynamic devices utilize the air flowing over the cooler to facilitate venting of a system fluid.

3,783,936

METHOD AND APPARATUS FOR CARRYING OUT A HEAT EXCHANGE BETWEEN A HEAT CARRIER MEDIUM AND A DRUM REACTOR

Edward Wisz, Kaiseraugst, Switzerland, assignor to Buss AG, Basel, Switzerland and Eisenbau Wyhlen AG, Wyhlen/Dentschland, Switzerland

Filed Jan. 12, 1972, Ser. No. 217,133
Claims priority, application Austria, Jan. 13, 1971, 226/71
Int. Cl. F28d 11/02
U.S. Cl. 165—90 3 Claims



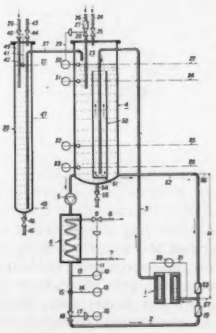
The present invention pertains to the indirect heating or cooling of a drum reactor by the exchange of heat from a heat carrier medium. The heat carrier medium is fed to one or more annular distribution chambers fixedly disposed about a stationary outer wall or jacket, thence through openings in the jacket into the annular space between the jacket and the rotatable drum wall, and finally out to one or more annular collection chambers. The distribution and collection chambers are spaced apart from each other and cause the heat carrier medium to flow longitudinally along the drum for more efficient heat exchange. In addition, the various inlet and exit ports of the alternate distribution chambers are radially spaced from each other such that the heat carrier flow is both longitudinal and rotational about the drum reactor.

3,783,937

APPARATUS FOR COOLING A CONTINUOUS CASTING MOULD

August Maurer, Linz, Austria, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed Dec. 13, 1972, Ser. No. 207,167
Claims priority, application Austria, Dec. 16, 1970, 11303/70
Int. Cl. B22d 7/04
U.S. Cl. 165—107 8 Claims



The invention relates to an apparatus for cooling a continuous casting mould, comprising a cooling water supply conduit,

an emergency cooling water supply conduit and a cooling water return conduit, all three conduits being joined to an overhead container which for its greatest part is filled with boiler feed water. At the upper part of said overhead container a space filled with a pressurized fluid is provided forming an elastic pressure cushion to protect the overhead container and all conduits from corrosion and boiler scale.

3,783,938

DISTURBING DEVICE AND HEAT EXCHANGER EMBODYING THE SAME

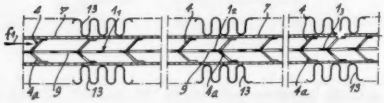
Andre Chartet, Meudon, France, assignor to Societe Anonyme Des Usines Chausson, Asnieres, France

Filed Jan. 11, 1972, Ser. No. 216,925

Claims priority, application France, Jan. 28, 1971, 7102885

Int. Cl. F28b *3/02*

U.S. Cl. 165—166 **10 Claims**



A heat exchanger comprises at least one tube containing at least one flow directing turbulence member disposed longitudinally therein and comprising a thin metal strip having at least one row of longitudinally spaced wings struck angularly therefrom and extending in the same direction longitudinally, said wings each having an aperture therein and being disposed at an obtuse angle alternately on opposite sides of the strip and resiliently engaging the inner wall of the tube.

3,783,939

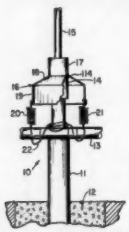
SPRAY SHIELD FOR OIL WELLS

Billy J. Edge, and Lloyd O. Collins, both of P.O. Box 6487, Odessa, Tex.

Filed Mar. 30, 1972, Ser. No. 239,699

Int. Cl. E21b *33/03*

U.S. Cl. 166—81 **5 Claims**



A spray shield assembly for oil wells which require artificial lift apparatus The shield assembly includes a hollow bonnet member and a seal assembly wherein the seal assembly is supported in overlying relationship relative to a stuffing box on an oil well. The bonnet member is affixed to oil well structure by resilient biasing means. A polished rod is sealingly and reciprocatingly received axially of the bonnet member and the seal assembly.

The spray shield is made in component parts which are joined together in a manner which enables its assembly to the well head without the necessity of dismantling any portion of the pumpjack.

3,783,940

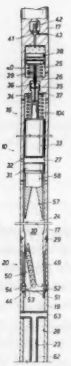
APPARATUS FOR PLUGGING WELL BORES WITH HARDENABLE FLUENT SUBSTANCES

Harold J. Urbanosky, Pearland, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Apr. 19, 1972, Ser. No. 245,421

Int. Cl. E21b *33/127*

U.S. Cl. 166—181 **17 Claims**



As a preferred embodiment of the apparatus of the present invention disclosed herein, an expansible bag mounted around a first tubular body is operatively arranged to be expanded into engagement with a well bore wall by a hardenable fluent substance initially contained in a selectively-operable displacement assembly including a second tubular body suspended from a cable and releasably coupled to the first body. Biasing means are operatively arranged for imposing opposed axial forces against the ends of the expanded bag to securely anchor the tool until the fluent substance has solidified. The new and improved apparatus further includes a unique release mechanism which is capable of withstanding severe shocks and other forces which may be imposed on the apparatus to guard against the unexpected or premature uncoupling of the two tubular bodies as it is being moved into a well bore and operated. The release mechanism is, however, easily and positively released by the discharge of the fluent substance from the displacement assembly.

3,783,941

ANCHORING MECHANISM FOR A WELL TOOL

James W. Kisling, III, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

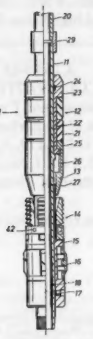
Filed Nov. 22, 1971, Ser. No. 200,912

Int. Cl. E21b *23/00*

U.S. Cl. 166—217 **9 Claims**

An anchoring mechanism for a well tool includes a slip element coupled for both tilting and lateral movement to an associated housing and held in normally retraction position by a conical coil spring capable of deflection to a substantially flat condition, said slip element when contacted by an expander tilting in one direction until a slip tooth engages the casing, whereupon continued movement of the expander behind the slip head causes tilting in the opposite direction for full en-

gagement of all slip teeth with the casing. Such tilting and outward movement is enabled by the coil spring's ability to assume a substantially flat condition so that the parts occupy a minimum of space.

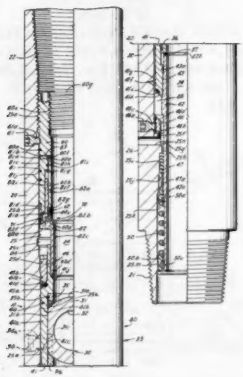


3,783,942

INSIDE DRILLING TOOL BLOWOUT PREVENTER

James D. Mott, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.

Filed Nov. 24, 1971, Ser. No. 201,878
Int. Cl. E21b *41/00*
U.S. Cl. 166—244 **13 Claims**



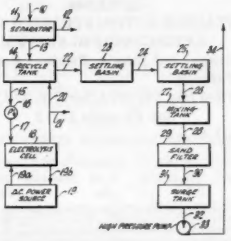
A drilling tool connected in a drilling string includes a pressure responsive rotatable ball valve for enabling drilling fluid flow down the bore of a drill string which automatically rotates closed for blocking flow through the bore of the drill string when incipient pressure conditions indicate the direction of flow through the bore may be reversed. Means for releasably locking the ball in the open position in response to a preselected directional pressure to enable the running of other tools and the like through the bore of the drilling string are provided. The drilling tool may be employed for controlling an undesired flowing stream of fluid from the bore of the drilling string by stabbing the tool to connect with the drilling string utilizing a stabbing member which is removed after connecting to enable the ball valve to rotate closed to control the flowing stream.

3,783,943

SECONDARY RECOVERY PROCESS UTILIZING BRINE ELECTROLYZED TO REMOVE HYDROGEN SULFIDE

Vernon H. Schievelbein; Leonard A. Shankle, both of Houston, Tex., and Herbert N. Wade, Riverside, Conn., assignors to Texaco Inc., New York, N.Y.

Filed Jan. 7, 1972, Ser. No. 216,190
Int. Cl. E21b *43/22*
U.S. Cl. 166—266 **2 Claims**



A process for the recovery of liquid hydrocarbons in which brine is injected into the formation via an injection well and a mixture of liquid hydrocarbons together with brine contaminated with hydrogen sulfide is recovered through a production well. After separation of the liquid hydrocarbons, the brine is subjected to electrolysis to form sodium hypochlorite which reacts with the hydrogen sulfide to yield brine having a substantially reduced hydrogen sulfide content suitable for reinjection into the formation.

3,783,944

IMPROVED PROCESS FOR THE RECOVERY OF OIL

Robert R. Jennings, Walnut Creek, Calif., and William M. Thornton, Houston, Tex., assignors to Dow Chemical Company, Midland, Mich. and Marathon Oil Company, Findlay, Ohio; a part interest to each

Filed Oct. 5, 1972, Ser. No. 295,204
Int. Cl. E21b *43/22*
U.S. Cl. 166—274 **15 Claims**

Improved oil recoveries, where the reservoir is flooded with a REM (recovery enhancing material) followed by a mobility control polymer, are obtained by either preceding the injection of the REM with a PCA (polymer conserving agent) or incorporating the PCA in a portion of the REM. The PCA, then, preferentially adsorbs onto available adsorption sites within the subterranean reservoir which otherwise would be occupied by the mobility control polymer. Examples of the PCA include polymers and copolymers of, for instance, acrylamide and sodium acrylate. They generally have an average molecular weight within the range of about 2000 to about 500,000.

3,783,945

REMOVING WATER FROM OIL-PRODUCING FORMATIONS

Dwight L. Dauben, and H. R. Froning, both of Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

Filed Jan. 5, 1972, Ser. No. 215,660
Int. Cl. E21b *43/16, 43/25*
U.S. Cl. 166—305 **11 Claims**

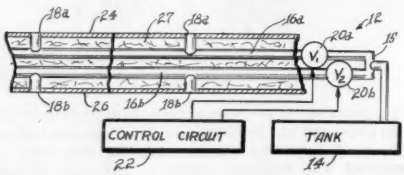
Water is removed from the portion of an oil-producing formation near a producing well. A micellar solution is used for this purpose. The solution may be a water-free concentrate or it may contain water. When the salt content of water in the well and in the formation is between about 20,000 and about 100,000 parts per million by weight, the formation of objectionable emulsions may occur. The severity of this problem is decreased by injecting a batch of low-viscosity substantially aliphatic hydrocarbon liquid ahead of the micellar solution. In

some cases, such as where very highly saline brines are present, the aliphatic hydrocarbon liquid may be preceded by a small batch of water containing little, if any, salt. The aliphatic hydrocarbon liquid may also be preceded by an aromatic hydrocarbon liquid or other solvent to dissolve organic deposits, such as paraffin, asphaltenes, and the like. Use of the aliphatic hydrocarbon liquid is also advantageous, even when low-salinity brine is present.

3,783,946
SELF-CONTAINED AUTOMATIC SEQUENCING FIRE EXTINGUISHING SYSTEM

Robert G. Petrinec, and Joan A. Petrinec, both of 617 S. East Ave., Oak Park, Ill.

Filed Jan. 29, 1973, Ser. No. 327,706
Int. Cl. A62c *35/12*
U.S. Cl. 169—2 A **10 Claims**

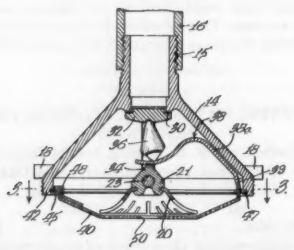


The invention disclosed herein is directed to a self-contained fire extinguishing system which includes a quantity of fire extinguishing material under pressure which is connected through conduit means to one or more dispensing nozzles. Control valve means are interposed in conduit means and are initially energized to cause the extinguishing material to pass through the valve means during a first initial condition and thereafter to cause subsequent sequential energization of the flow control valve means to insure that fire extinguishing characteristics are maintained for a predetermined time thereafter.

3,783,947
AUTOMATIC SPRINKLER HEAD

Keith M. Dix, Des Plaines, and Bert Bonbrake, Jr., Argo, both of Ill., assignors to Fire Protection Company, Chicago, Ill.

Continuation-in-part of Ser. No. 205,224, Dec. 6, 1971, abandoned. This application Apr. 2, 1973, Ser. No. 346,760
Int. Cl. A62c *37/08*
U.S. Cl. 169—40 **30 Claims**

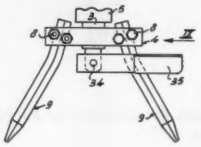


An automatic sprinkler head adapted to be mounted in a ceiling approximately flush with the ceiling surface including a dish-shaped housing member having a water inlet adapted to be attached to a supply pipe, a deflector mounted on the housing opposite the inlet and having a fulcrum thereon opposed to the inlet, a valve disc closing the inlet, a strut holding the disc, a lever holding the strut, a cover closing the housing and having a portion engaging the lever to hold the latter in position, and latch tabs on the cover engaging the housing, at least one of which tabs is separably attached to the cover by fusible material which releases when the ambient temperature reaches a predetermined high value. Four forms are shown.

3,783,948
CULTIVATORS

Ary Van Der Lely, Maasland, and Cornelis Johannes Gerardus Bom, Rozenburg, both of Netherlands

Continuation of Ser. No. 817,110, Apr. 17, 1969, abandoned. Filed Sept. 13, 1971, Ser. No. 180,125
Claims priority, application Netherlands, Apr. 17, 1968, 6805358
Int. Cl. A01b *33/00*
U.S. Cl. 172—49 **6 Claims**

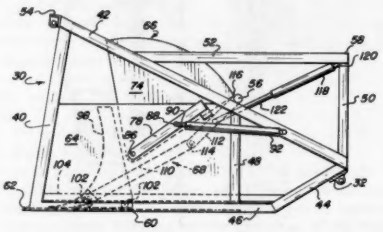


A cultivator with a frame that supports a plurality of side-by-side rotatable members having spaced-apart tines that crumble the soil during operation. The tines are held by a support in a vareity of positions so that the soil working portions are changed depending on the amount of soil working desired. A trailing soil-smoothing member is attached to the rear of the cultivator.

3,783,949
SNOW HANDLING APPARATUS

Loren R. Maxey, 615 S. Loomis, Fort Collins, Colo.

Filed Apr. 5, 1971, Ser. No. 130,892
Int. Cl. A01b *5/00*; **E02a** *5/00*
U.S. Cl. 172—133 **9 Claims**



Snow handling apparatus especially useful for the grooming of ski slopes or roads or trails used by over-the-snow vehicles. A pan assembly with a flat rectangular bottom panel and opposed vertical side walls is mounted in a snow roller frame to be towed behind a towing vehicle. The pan assembly is pivotally supported at its rearward end on the snow roller axis and its forward end can be raised or lowered relative to the roller frame by hydraulic motors controlled from the towing vehicle. A bulldozer-like blade extends transversely between the opposed side walls and is supported on the bottom panel for movement between the front and rear edges of the bottom panel, movement of the blade again being controlled by hydraulic motors. A gate is pivotally mounted on the side walls for movement between a closed position in which the gate rests on the front edge of the bottom panel and closes the space between the forward ends of the side walls and an open position in which the gate projects upwardly from the rear-

ward ends of the side walls. When the blade is in its rearward most position, the gate when in its open position provides a vertical extension of the blade. With the gate opened and the blade in its rearwardmost position, the pan assembly is lowered to scoop up snow as it is towed. When the pan is filled the gate, which is curved concentrically about its pivotal axis, is closed and the pan assembly is elevated to enable the snow in the pan assembly to be transported to a dumping area. At the dumping area, the gate is opened and the blade is advanced forwardly at a rate related to the speed at which the assembly is being towed to discharge snow from the pan assembly in a layer of selected thickness. The discharged snow is leveled and compacted by the trailing snow roller.

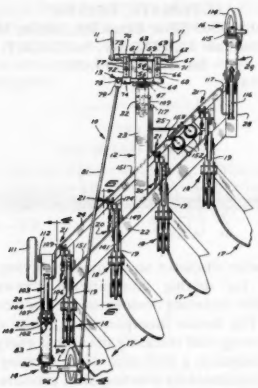
3,783,950
SEMI-MOUNTED PLOW

Cletus J. Geurts, Gwinner, N. Dak., assignor to Geurts, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 486,712, Sept. 13, 1965, Pat. No. 3,642,074, Division of Ser. No. 666,047, Sept. 7, 1967, Pat. No. 3,642,073. This application Apr. 29, 1971, Ser. No. 138,827

Int. Cl. A01b *69/00, 63/16, 59/042*

U.S. Cl. 172—285 **12 Claims**



A semi-mounted moldboard plow connected to the draft links of a tractor by a hitch having longitudinal, upright and transverse pivotal movements with respect to the frame of the plow. The hitch is connected to a tail wheel of the plow so that the wheel turns in the direction of movement of the tractor. Each plow bottom of the plow is held in the ground working position by a hydraulic holding, release and return mechanism. Fluidly coupled with the hydraulic mechanism of each plow bottom is a fluid cylinder which yieldably holds a colter in ground working position.

3,783,951
HARROW ASSEMBLY WITH ROCK FRAME TUBES

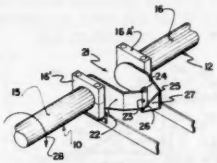
Robert J. Gugin, P.O. Box 926, Minnedosa, Manitoba, Canada

Filed Feb. 22, 1972, Ser. No. 228,280

Int. Cl. A01b *49/00*

U.S. Cl. 172—311 **1 Claim**

A flange or pocket is offstanding on one end of the rock tube of the wing sections of a harrow and is engageable by an offstanding crank on the corresponding end of the rock tube of the center section so that rotation of the center section rock tube also rotates the rock tubes of the wing sections. An adjustment is provided and of importance is the fact that the connection between the flanges or pockets and the cranks is



free and not fixed thus allowing upward hinging and flexibility of the wing sections relative to the center section.

3,783,952
ROTARY SOIL WORKING MACHINE

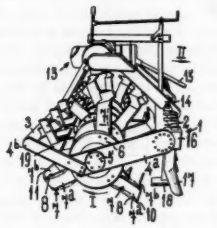
Antonius Josephus Van Gemert, Wanroy, Netherlands, assignor to Van Gemert N.V., Wanroy, Noord-Brabant, Netherlands

Continuation-in-part of Ser. No. 824,556, May 14, 1969, abandoned. This application Sept. 29, 1971, Ser. No. 184,922

Claims priority, application Netherlands, May 17, 1968, 6807087

Int. Cl. A01b *33/10*

U.S. Cl. 172—540 **3 Claims**



A shaft mounted in the machine to rotate on a horizontal axis extending transverse to the travel of the machine carries a plurality of generally radial members lying substantially in a common plane perpendicular to the shaft. A plurality of sod-lifting arms extend axially in the same direction from the ends of the radial members. Each of the arms consists of a substantially flat plate which is L-shaped in outline and consists of a base portion having substantially parallel sides which is attached to the radial member and is raked forward in the direction of rotation and a stem portion having substantially parallel sides which is raked backward.

3,783,953
POST DRIVING APPARATUS

Arnold F. Kopaska, Guthrie Center, Iowa

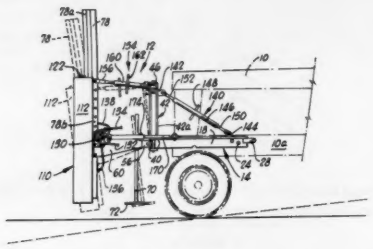
Filed Aug. 5, 1971, Ser. No. 169,247

Int. Cl. E21c *11/02*

U.S. Cl. 173—23 **15 Claims**

Apparatus for driving a post into the earth, including a mounting frame assembly for attaching the apparatus to a supporting vehicle, and a vertically extending mast assembly pivotally mounted on the mounting frame assembly for pivotation about horizontal and vertical pivotal axes. A driving assembly is slidably mounted on the mast assembly for vertical reciprocating movement, and a hydraulic piston and cylinder assembly is mounted on the mast assembly and includes a hydraulic cylinder having one end pivotally connected to the lower end of the mast assembly, and a piston rod extending from the upper end of the hydraulic cylinder, and detachably engaging teeth on said driving assembly. The piston rod car-

ries cam rollers at its upper end which engage track plates and camways for automatic disengagement of the piston rod from the teeth on the driving assembly at the stroke limit of the piston rod.



3,783,954

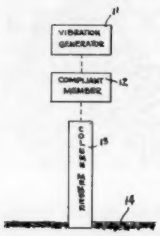
SONIC RESONANT DRIVING OF A COLUMN MEMBER UTILIZING COMPLIANT RESONATOR ELEMENT

Albert G. Bodine, 7877 Woodbury Ave., Van Nuys, Calif.

Filed Jan. 24, 1972, Ser. No. 220,250

Int. Cl. E02d *7/18*

U.S. Cl. 173—49 **6 Claims**



A column member which may comprise a piling, casing, shaft or the like, is driven into the ground by means of sonic energy generated by a vibration generator. The vibration generator, which may comprise an orbiting mass oscillator, is coupled to the column member by a high impedance compliant element, the compliancce of this element and the mass of the column forming a resonant vibration system. The vibration generator is operated at a frequency such as to cause resonant vibration of the system with the compliant element providing lumped constant compliance and the column member providing lumped constant mass in such system.

3,783,955

POWER TOOL

Peter John Gill, Wolverhampton, England, assignor to G.K.N. Screws & Fasteners Limited, Worley, England

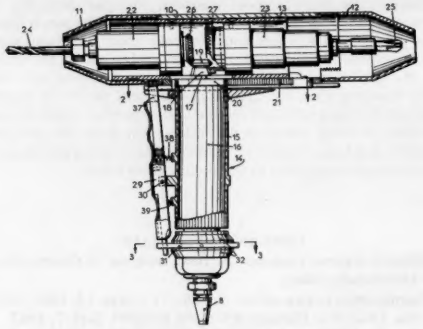
Filed Apr. 21, 1972, Ser. No. 246,271

Claims priority, application Great Britain, Apr. 21, 1971, 10,374/71

Int. Cl. B23b *45/00*

U.S. Cl. 173—50 **14 Claims**

A portable power tool having two work implements, such as a drill bit and a screwdriver bit, located at opposite ends of the body of the tool and facing in opposite directions with the body being mounted on a handle so that it can be turned through 180° relative to the handle to bring one or the other of the implements into a working position. The body is provided with guard means so that whichever implement is not working is covered by the guard means. An air motor for driving the work implements may be mounted in the body of the tool or in the handle and driving the work implements through suitable gearing.



3,783,956

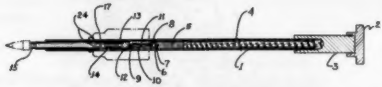
AUTOMATIC DRIVER

Donald J. Schultz, 3505 Silver Creek Rd., Joplin, Mo.

Filed Jan. 24, 1972, Ser. No. 220,261

Int. Cl. B25b *19/00*

U.S. Cl. 173—93.7 **15 Claims**



This application discloses an automatic driving device of a type suitable for driving conventional screws, threaded fasteners or other fastening devices, opened or closed, by relative rotation. The device incorporates a means of automatically storing energy and releasing the stored energy to impart a controlled torque to a tool capable of rotating a fastening device whil simultaneously exerting axial pressure forcing the tool against the fastening device. The device may be incorporated in a tool suitable for manual use.

3,783,957

APPARATUS FOR SUPPLYING LOOSE MATERIALS IN AMOUNTS OF WEIGHT TO CONTINUOUSLY MOVING CONTAINERS

Vincenzo Borghi, Modena, Italy, assignor to Azionaria Costruzioni Macchine Automatiche A. C. M. A. S.p.A., Bologna, Italy

Filed Oct. 26, 1971, Ser. No. 192,552

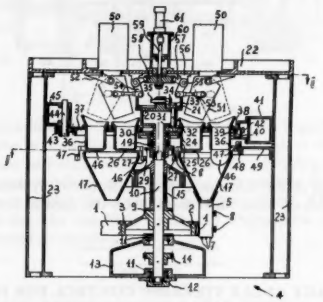
Claims priority, application Italy, Nov. 7, 1970, 3610A/70

Int. Cl. G01g *13/00*

U.S. Cl. 177—54 **3 Claims**

An apparatus for the supply of loose materials in amounts of determined weight to containers, comprising a horizontal continuously moving endless conveyor provided thereon with regularly spaced seats for containers a first station for placing the containers to be filled on the said conveyor and a second station for releasing the filled containers therefrom, between the said first and second stations and over the said conveyor it further comprises at least one series of automatic stationary scales capable of receiving product from at least one feeding station and arranged to intermittently release amounts of product of determined weight, at least two series of hoppers regularly spaced from one another and relative to the scales

and seats, and arranged at a level lower than that of the series of scales, each series of hoppers including a number of hoppers equal to that of the scales and being carried movable along a path parallel to the series of scales and another length parallel to a section of the said conveyor, the said series of hoppers being also controlled alternatively to one another



thus successively going from a standstill condition below the scales to receive the amounts of product to a motion condition in time relationship with the conveyor to discharge the amounts of product into the containers on the conveyor, relative series of conveyors being provided at the outlets of the scales and hoppers.

3,783,958

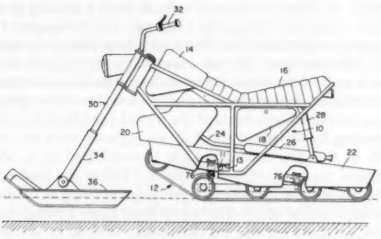
OFF-ROAD VEHICLE

Thomas E. Canavan, 326 S. Webber Dr., Chittenango, N.Y.

Filed May 10, 1972, Ser. No. 252,102

Int. Cl. B62m *27/02*; **B62d** *55/02*, *55/10*

U.S. Cl. 180—5 R **6 Claims**



An off-road vehicle comprising an endless track for driving the vhicle, front and rear rotary members mounted for rotation upon a fixed frame, the track being trained about the rotary members to define a closed loop having upper and lower lengths of track with respect to those rotary members, and pairs of load-bearing wheels rotatably mounted upon a second frame disposed within the loop, the wheels engaging inside the lower length of track in load-supporting relation to the fixed frame. Connecting means are provided which connect the second frame to the fixed frame, the connecting means including positioning means operative to maintain a first end pair of wheels at a greater distance from the fixed frame than the other end pair of wheels, the second frame and positioning means being movable with respect to the fixed frame to an orientation in which the first end pair of wheels is at a lesser distance from the fixed frame than the other end pair of wheels for adjusting the position of the lower track run relative to the terrain.

3,783,959

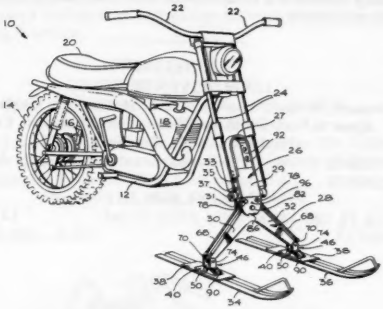
SKI VEHICLE WITH IMPROVED FRONT SUPPORT MEANS

Robert E. Krume, 20440 Anza Ave. No. 224, Torrance, Calif.

Filed Mar. 6, 1972, Ser. No. 231,877

Int. Cl. B62m *29/00*

U.S. Cl. 180—6 A **20 Claims**



A ski vehicle with improved front support means is provided which includes a two-wheeled powered vehicle body frame, seat, motor, powered rear support wheel and steering means, including handle and front wheel frame. The front support means for the vehicle is in the form of a bracket secured to the wheel frame, a ski support assembly pivotably connected to the bracket to permit transverse rotation of the former relative to the latter, a pair of skis pivotably connected to the spaced depending legs of the assembly and means interconnecting the bracket and each ski, whereby rotation of the bracket and frame in a transverse plane effects like rotation of the skis. The skis can also rotate upwardly and downwardly, the extent being controlled by limit means. Means may also be provided to limit the extent of transverse rotation of the skis and to releasably lock the bracket and ski support assembly together for ease of transportation.

3,783,960

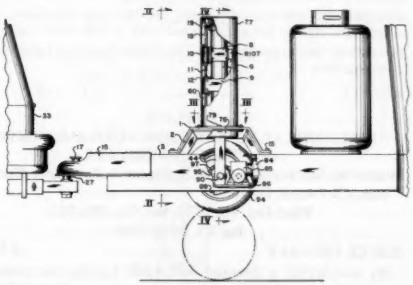
TRAILER MANEUVERING JACK

Jack M. Feliz, 34-808 Via Echo, Palm Springs, Calif.

Filed Jan. 10, 1972, Ser. No. 216,653

Int. Cl. B60s *9/16*

U.S. Cl. 180—14 A **4 Claims**



A self-contained conveyance or maneuvering device for mounting to the tongue platform of a trailer or the like which has a jack column and a ground-engaging wheel at the lower end thereof which can be vertically raised or lowered by power. The jack column is also rotatably power driven in either direction so as to direction orient the wheel. The wheel

is reversibly power driven to move the platform and trailer. The vertical and rotational movement of the jack is accomplished by a single drive source which drives a tranmission which in turn is connected, respectively, to the drives for vertically translating the jack column, and for rotating it. The directions of movement and power applications are determined by a control circuit and control switches, the switches for controlling wheel direction and wheel reversible rotation being located in a hand control unit at the end of a length of electrical cable.

3,783,961

LOOP DRIVEN VEHICLES

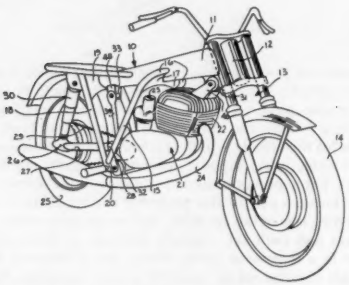
Bernard Hooper, Wordsley near Stourbridge, England, assignor to Norton Villiers Limited, Wolverhampton, England

Filed July 2, 1971, Ser. No. 159,448

Claims priority, application Great Britain, July 7, 1970, 32803/70

Int. Cl. B60k *5/12*

U.S. Cl. 180—33 A **12 Claims**



The specification discloses a motor cycle in which a power unit is mounted in a frame on resilient mountings and the rear road wheel is mounted in a fork swinging on the power unit and connected to springing means. There are two mounting means and a lateral locating means between the power unit and the frame, such mountings being at the apices of a triangle lying in a plane perpendicular to the rotary axis of the rear road wheel. The mounting means are resilient and the means together, are such as to allow a greater amplitude of movement in directions radial of said rotary axis than in directions parallel to said rotary axis and the movement of the power unit relative to the frame at each of said means is positively controlled in directions parallel to said axis. The specification also discloses that the mountings are located on parts of the frame which are rigidly interconnected with a link from one of the mountings to the power unit. The frame may be of sheet metal construction.

3,783,962

MECHANICAL LINKAGE FOR AUXILIARY DRIVE CONTROL IN VEHICLES

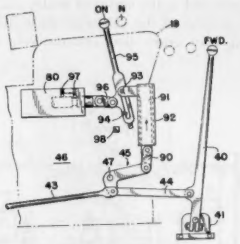
Walter M. Shaffer, Peoria, Ill., assignor to Towmotor Corporation, Cleveland, Ohio

Filed Oct. 10, 1972, Ser. No. 296,222

Int. Cl. B60k *7/00*

U.S. Cl. 180—44 F **4 Claims**

By employing a pivoted bellcrank having one end connected to a transmission control lever in a vehicle a linkage-valve arrangement can provide automatic directional control for an auxiliary drive when connected to the other end of the bellcrank without complex mechanisms. This arrangement includes a fulcrum bar reciprocally mounted in a guide having one end connected to the bellcrank and a fulcrum pin at its opposite end, a control lever having an elongated slot engaged on the pivot pin with a valve mounted so its cylindrical spool axis is normal to the reciprocal movement of the fulcrum arm with the control lever connected to valve spool whereby the



position of the fulcrum arm will automatically determine the direction of valve movement when the control lever is actuated.

3,783,963

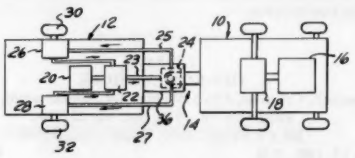
LINKAGE ANGLE STEERING CONTROL FOR POWERED IN-TANDEM VEHICLES

Louis R. Erwin, Livonia, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 28, 1972, Ser. No. 229,900

Int. Cl. B62d *11/04*

U.S. Cl. 180—6.3 **2 Claims**



A steering control arrangement for powered in-tandem vehicles, in which a powered vehicle trails a leading powered vehicle connected thereto by a linkage, the arrangement comprising an angle sensor at the connecting linkage sensing the angle between the vehicles created by steering of the lead vehicle or by deviations of the trailing vehicle due to roadway variations or other causes, and means for controlling the power to individual wheels of the trailed vehicle so as to create a steering-by-driving thereof in accordance with the sensed angle so that the trailed vehicle is steered so as to tend to eliminate the angle therebetween and follow the lead vehicle. In the embodiment disclosed, the angle existing at the linkage controls a valve which distributes flow from a pump to drive individual fluid motors on the trailed vehicle in accordance with the sensed angle to steer-by-drive the trailed vehicle to track the lead vehicle.

3,783,964

VEHICLE WITH QUICK-DISCONNECT ENGINE MODULE

George O. Telesio, 7709 S. Milan Ave., Whittier, Calif.

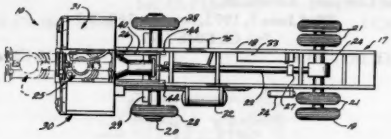
Filed Mar. 2, 1972, Ser. No. 231,133

Int. Cl. B60k *5/10*

U.S. Cl. 180—64 L **5 Claims**

A commercial vehicle, such as a refuse collection truck, has a chassis which includes a frame, drivable ground-engaging traction means mounted to the frame, and drive means coupled to the traction means and connectible to an engine for driving the traction means. An engine for the vehicle is carried in a support which is mounted to the frame for movement of the support between a retracted position, in which the engine is connected to the drive means, and an extended position in which the engine is disconnected from the drive means and is

accessible for ready disconnection from the support and the vehicle. Selectively operable means are provided for moving the engine support between its retracted and extended positions relative to the frame and for connecting the engine to the drive means in the retracted position of the support. All control systems provided between the vehicle operating station and the engine include quick-disconnect couplings by which the engine is readily disconnected from the vehicle. Also, fuel lines and the like associated with the engine also include quick-disconnect couplings.



3,783,965

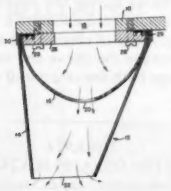
AIR CUSHION VEHICLE SEAL SYSTEM

Raymond Grenville Whitehead Wright, New Orleans, La., assignor to Textron Inc., Providence, R.I.

Filed May 25, 1972, Ser. No. 256,886

Int. Cl. B60v *1/16*

U.S. Cl. 180—128 **12 Claims**



In an air cushion vehicle, a novel side-by-side arrangement of a plurality of like sized-and-shaped two-part "jupe" type air-inflated cell-bag units of novel form; providing a novel two-stage stiffness air cushion seal system featuring improved maintainability.

3,783,966

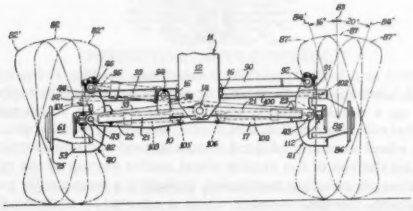
STEERING SYSTEM FOR VEHICLES

John J. Campbell, and Cullen P. Hart, both of Decatur, Ill., assignors to Caterpiller Tractor Co., Peoria, Ill.

Filed Aug. 18, 1972, Ser. No. 281,919

Int. Cl. B62d *5/06, 7/00*

U.S. Cl. 180—79.2 R **13 Claims**



A steering system for vehicles includes an oscillating axle, a pair of wheel lean members individually transversely rockably coupled to the opposite ends of the axle, a pair of king pins associated with each of the wheel lean members, a pair of spindle housings individually pivotally movable on each wheel lean member through the king pins and having an integral steering arm thereon, a pair of wheels individually rotatable with respect to the spindle housings, a tie rod directly connecting each of the steering arms, and at least one steering cylinder connected between one of the steering arms and the axle to provide a high angle of steer for increased vehicle maneuverability and a minimum of interaction between wheel lean and steering functions.

3,783,967

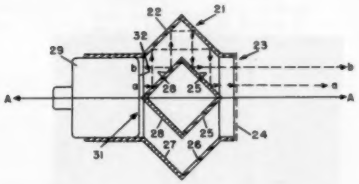
FOCUSING PROTECTIVE ENCLOSURE FOR ULTRASONIC TRANSDUCER

Edward G. Apgar, Lexington, Mass., assignor to The United States of America as represented by the Secretary of the Department of Transportation, Washington, D.C.

Filed Feb. 24, 1972, Ser. No. 229,084

Int. Cl. G10k *11/06*

U.S. Cl. 181—.5 ED **5 Claims**



Disclosed is an enclosure for ultrasonic transducers that can either project a narrow beam of energy or receive energy within a narrow cone of angles and also protect the transducer from damage. The enclosure defines an opening that is covered with a screen mesh that permits ingress and egress of wave energy. Within the enclosure the wave energy is subjected to a plurality of reflections from conically shaped reflective surfaces that provide optical shielding for the transducer, yet maintain the planar wave characteristics. An embodiment is disclosed that passes the wave energy through a honeycomb structure to further enhance directional properties. The subject enclosure can be used as a transmitter of wave energy or a directional receiver of wave energy.

3,783,968

SOUND BARRIER

Carl E. Derry, 400 W. Orangethorp, No. 105 B, Fullerton, Calif.

Filed Dec. 29, 1972, Ser. No. 319,379

Int. Cl. B64f *1/26;* **E01f** *15/00*

U.S. Cl. 181—33 G **17 Claims**

A sound barrier comprising a plurality of hollow, wedge-shaped, energy dissipating cells mounted in parallel, side-by-

side, spaced relationship as inverse-acting acoustic horns, first sides of all cells being coplanar. Each of the cells has a plurality of openings in the remaining two sides thereof along the edges which are adjacent the first side and a plurality of elongated openings along the apex defined by the intersection of the two sides. Each cell is made in two interlocking parts, one part forming the first side and the other part forming the remaining two sides. Each part comprises a thin outer shell of structurally rigid material and an inner lining of sound deadening material, such as polyurethane closed cell foam.

3,783,969

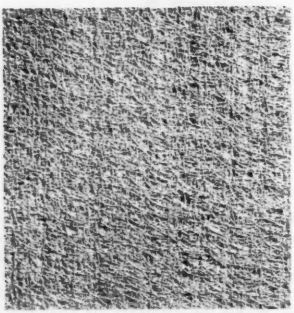
ACOUSTIC INSULATION COMPRISING ANISOMETRIC COMPRESSED AND BONDED MULTILAYER KNITTED WIRE MESH COMPOSITES

David B. Pall, Roslyn Estates, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Division of Ser. No. 732,443, May 27, 1968, Pat. No. 3,690,606. This application Sept. 29, 1970, Ser. No. 76,634

Int. Cl. F01n *1/10, 1/04, 7/16*

U.S. Cl. 181—33 G **18 Claims**



(6x)

Acoustic insulation is provided which comprises anisometric compressed and bonded knitted wire mesh composites composed of a plurality of sheets of knitted wire mesh, superimposed at random orientation with respect to each other, compressed or densified to a voids volume within the range from about 10 to about 90 percent and bonded together. The sheets are taken in sufficient number, usually at least five and preferably 10 or more, and as much as 1,000 or more, to form a self-supporting relatively non-resilient composite of high tensile strength and high breaking strength having an average pore diameter of less than 200 microns, and preferably less than 100 microns, that is relatively uniform in any unit area of the surface, and having an anisometric porosity, the through pores extending crosswise of the sheet greatly exceeding in number the through pores extending laterally of the sheet, which latter pores can be reduced virtually to zero in a highly compressed composite.

The composite is formed by superimposing a plurality of knitted wire mesh sheets, annealing the composite to avoid wire breakage during later processing, compressing the composite to the desired density and anisometricity by application of pressure in a direction approximately perpendicular to the plane of the layers of the composite, and bonding the sheet layers and the wire filaments of the sheets together at their points of contact and/or crossing. The bonding holds the composite at the selected density, prevents relative movement of the wires in the composite, and in conjunction with the multilayer structure imparts the self-supporting nonresilient characteristic, together with high tensile strength and high breaking strength.

3,783,970

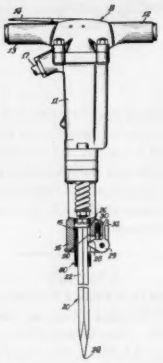
SOUND ATTENUATING DEVICE FOR A WORK STEEL OR THE LIKE

Irvin R. Danielson, Burr Ridge, Ill., assignor to Thor Power Tool Company, Aurora, Ill.

Filed June 7, 1972, Ser. No. 260,373

Int. Cl. E04b *1/99*

U.S. Cl. 181—33 A **12 Claims**



A sound attenuating device for a work steel or other tool subject to impact blows during the operation thereof is disclosed, wherein a metal sleeve encircles a portion of the body of the steel and a quantity of elastomeric material is provided in the clearance between the sleeve and steel so as to fill such clearance and engage both the exterior of the steel and the interior of the sleeve.

3,783,971

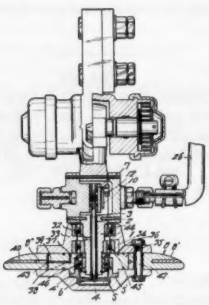
LUBRICATION OIL APPLICATOR DEVICE

Susumu Miyake, Takamatsu, Japan, assignor to Fuji Toyuki Co., Ltd., Takamatsu City, Japan

Filed Mar. 8, 1972, Ser. No. 232,828

Int. Cl. F16n *9/02*

U.S. Cl. 184—3 R **4 Claims**

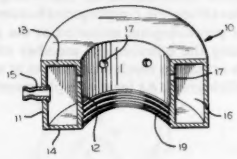


A lubrication oil applicator device for applying lubrication oil on a running vehicle wheel and or a rail on which said wheel runs, is provided, said device comprising an oil applicator wheel assembly adapted to contact and apply lubrication oil on the rim of the vehicle wheel and/or the top of the rail and an oil metering mechanism including a reciprocally and rotatably movable member which is adapted to reciprocally and axially move and rotate in response to the rotational movement of said applicator wheel so as to pump the lubrication oil to the applicator wheel in a predetermined amount.

3,783,972
WIRE LUBRICATING DEVICE

David R. Molstad, Box 318, Blair, Wis.

Filed Dec. 16, 1971, Ser. No. 208,695
Int. Cl. F16n 3/10
U.S. Cl. 184—15 R 2 Claims

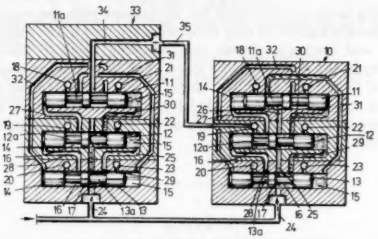


A wire lubricating device for lubricating cable to facilitate sliding the cable through conduit. The device is a hollow cylindrical tube section which fits around the wire and holds the lubricant under pressure therein. Apertures juxtaposed to the cable spread the lubricant on the cable as it passes through the device.

3,783,973
CENTRAL LUBRICATING SYSTEM

Fritz Kurten, Dornap, and Horst Saretzky, Ennepetal, both of Germany, assignors to De Limon Fluhme & Co., Dusseldorf, Germany

Filed May 17, 1971, Ser. No. 144,118
Int. Cl. F16n 25/02
U.S. Cl. 184—7 E 10 Claims



A central lubricating system with at least a first and second distributing means each of which has cylinder means with reciprocable valve spools each having two end pistons and an intermediate control member. The control members of each distributing means control the admission of lubricant to areas to be lubricated. Conduit means lead from outlet means of the first distributing means to a control member controlled control chamber of the second distributing means. The conduit means establish the sole fluid communication of the last mentioned outlet means of the first distributing means with the control chamber of the second distributing means.

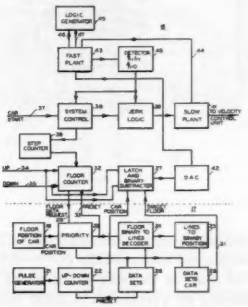
3,783,974
PREDICTIVE DRIVE CONTROL

Edward O. Gilbert, and Elmer G. Gilbert, both of Ann Arbor, Mich., assignors to Reliance Electric Company, Cleveland, Ohio

Filed May 9, 1972, Ser. No. 251,810
Int. Cl. B66b 1/30
U.S. Cl. 187—29 R 81 Claims

A drive control illustrated for controlling an elevator hoist motor and car position involving a control pattern causing the car to follow idealized constraints of constant jerk in transitions between constant velocity and constant acceleration. In the initial phase the control pattern for the car is started, from zero velocity, through constant positive jerk to a constant acceleration which, if a run of sufficient length is required, is followed by a constant negative jerk into a maximum constant velocity. The length of the constant acceleration interval is terminated by achieving a predetermined velocity which when subjected to the predetermined negative jerk value will achieve zero acceleration at the given maximum velocity. Deceleration is initiated at the moment the control pattern is indicated to be capable of stopping the car, within the constraints of jerk and negative acceleration, at the desired destination.

The instant of initiation of the terminal phase of the pattern is ascertained by a high speed repetitive predicted pattern

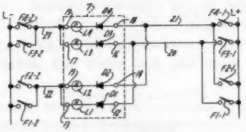


generated from the control pattern, for example at a speed one thousand times faster than the control pattern and with constraints which make its performance slightly inferior to that of the elevator. The predicted pattern indicates a stop position slightly in advance of the stop achieved by the elevator under the predetermined constraints of the control pattern. During deceleration, the predicted pattern is repetitively generated from the control pattern as an initial point. The indication of a predicted pattern stopping position short of the desired stop causes the control pattern to switch to positive jerk while prediction of a stop beyond the desired stop causes the control pattern to switch to negative jerk. This chattering control brings the elevator to the desired floor in a closed loop control.

3,783,975
POSITION INDICATING APPARATUS

Robert Lindegger, Scarborough, Ontario, Canada, assignor to Armor Elevator Company, Inc., Louisville, Ky.

Filed June 7, 1972, Ser. No. 260,429
Int. Cl. H02j 1/00
U.S. Cl. 187—29 R 11 Claims



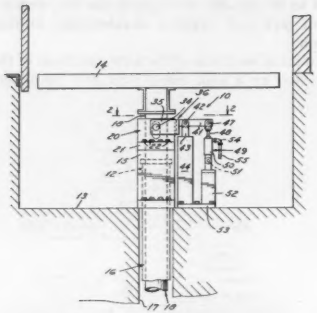
A position indicating apparatus for an elevator system is remotely located from a position sensing apparatus in a structure having n number of floors and a corresponding n number of position indicators which are electrically divided into a plurality of P number of groups. N number of conductors are employed for connecting the n number of position indicators to the position sensing apparatus as determined by the formula N=A+P where A is equal to n divided by P with the quotient increased to the next whole number if fractionalized.

3,783,976

SAFETY DEVICE FOR HYDRAULICALLY OPERATED LIFT

James W. Kerr, 18232 Magnolia, Southfield, Mich.

Filed July 26, 1972, Ser. No. 275,279
Int. Cl. B66f 7/00; F15b 15/26
U.S. Cl. 187—8.45 **13 Claims**



The device is shown as associated in the usual subfloor pit with a conventional hydraulically powered lift mechanism to check fall of a lift or elevator in the event of an emergency loss of pressure or overspeed. A fixed housing is mounted atop the lift's power cylinder super-structure; and a pivotal, bifurcated arm or fork-shaped actuator head embraces the fixed housing, an operating extension tail of said head projecting from one side of the latter. The furcations of said pivoted head carry trunnion-like actuator pins, which extend through vertically elongated slots in opposite sides of the fixed housing; and the ends of said trunnions are received in outer side openings of each of a pair of identical collets. These are actuable in the fixed housing parallel to the axis of the lift's hydraulic power rod or piston for releasable frictional radial engagement with said rod of arcuate inner collet areas, thus to safety-halt an undesired downward retrograde movement of the latter. To this end external tapered collet wedge surfaces engage correspondingly tapered internal wedge surfaces of the fixed housing. The same source of hydraulic power which operates the lift rod is at all times in communication with a spring return-type safety cylinder unit of the device; and the plunger of this unit is connected to the extension tail of the pivotal actuator head. This is in a manner such that normal hydraulic pressure urges the head in a direction to de-wedge the collets from clamping engagement with the lift power rod, through the agency of the head's trunnions. A loss or substantial droppage of the hydraulic pressure correspondingly depressurizes the safety cylinder unit, enabling its built-in return spring to operate the actuator head in the opposite direction and cause the collet members to grip the power rod against fall. Supplemental spring means normally assist in insuring separation of the collets from the rod when the device is not in operation.

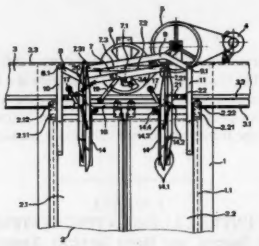
3,783,977

DOOR ACTUATION APPARATUS WITH LOCKING MECHANISM FOR ELEVATORS

Albert Voser, Ebikon, Switzerland, assignor to Inventio AG, Hergiswil, Switzerland

Filed Dec. 20, 1971, Ser. No. 209,826
Claims priority, application Switzerland, Dec. 30, 1970, 19397/70
Int. Cl. B66b 13/00
U.S. Cl. 187—52 **7 Claims**

A door actuating apparatus for elevators, wherein an elevator cabin door is positively connected at the region of the floor of a building by a coupling mechanism with an elevator shaft door located at each such building floor. The elevator cabin door is movable through the agency of a thrust crank drive located in a dead-center position when the elevator cabin door is closed, such thrust crank drive possessing a crank wheel driven by a motor arranged at the elevator cabin through the agency of a speed reduction drive. According to important aspects of the invention the coupling mechanism incorporates an entrainment parallelogram mounted at the elevator cabin door and forming the entrainment member of the coupling mechanism. An actuation mechanism serves to actuate the entrainment parallelogram. At least one pin member is secured



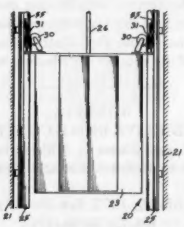
to the elevator shaft door. The entrainment parallelogram cooperates with such pin member for the purpose of coupling the elevator shaft door with the elevator cabin door. A blocking lever is connected for movement with the entrainment parallelogram. A stop member is secured to the elevator cabin and cooperates with said blocking lever to prevent opening of the elevator cabin door when the blocking lever is located within the effective range of said stop member and permits opening of said elevator cabin door when said blocking lever is located outside of the effective range of said stop member.

3,783,978

STOP CONTROL FOR ELEVATORS

Douglas Hamilton, Baltimore, Md., assignor to Elevator Safety Company, Baltimore, Md.

Filed July 24, 1972, Ser. No. 274,320
Int. Cl. B66b 5/16
U.S. Cl. 187—73 **7 Claims**



An elevator safety mechanism that includes a means for stopping movement of elevators in the event of earthquakes or other shocks.

3,783,979

BRAKE PADS AND WEAR INDICATORS THEREFOR

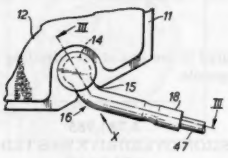
Wolfgang Hess, Koblenz, Germany, assignor to Girling Limited, Birmingham, England

Filed May 15, 1972, Ser. No. 253,349

Claims priority, application Great Britain, May 21, 1972, 16,275/72

Int. Cl. F16d 66/02

U.S. Cl. 188—1 A 2 Claims



A disc-brake pad has a wear indicator characterised in that the indicator is separate from the frictional material and is slid into position on the backing plate from one edge thereof. The advantage is that the wear indicator and the leads thereto do not occupy space behind the backing plate .

3,783,980

BRAKE LINING HOLDING ARRANGEMENT FOR SPOT-TYPE DISC BRAKES

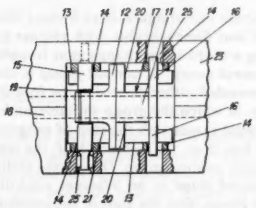
Werner Kallmeyer, Gifhorn, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Sept. 22, 1972, Ser. No. 290,284

Claims priority, application Germany, Oct. 13, 1971, P 21 51 044.1

Int. Cl. F16d 65/00

U.S. Cl. 188—73.5 11 Claims



There is disclosed an arrangement to hold the brake-lining carrier plates and their associated brake lining in place in a spot-type disc brake. The holding arrangement eliminates one of the usual holding pins without any disadvantage. A cross-shaped expanding spring having a longitudinal beam and a transverse beam is employed in the holding arrangement. This spring has one end of the longitudinal beam engaged in a recess in a holding pin while a pair of transverse projections extending in opposite directions are formed integral with and on the other end of the longitudinal beam. The transverse projections take over the function of one holding pin. The transverse beam is provided with downward extending projections to engage the surface of the upper edge of both the carrier plates.

3,783,981

SELF-ADJUSTING DEVICE FOR BRAKES

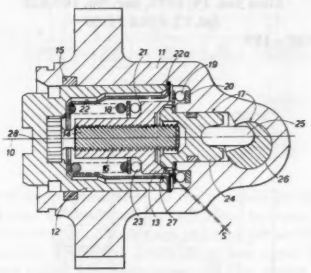
Jochen Burgdorf, Odenwaldring, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed July 26, 1972, Ser. No. 275,374

Claims priority, application Germany, Aug. 31, 1971, P 21 43 575.7

Int. Cl. F16d 55/16

U.S. Cl. 188—106 F 10 Claims



This relates to an automatic lining-wear adjusting device for a hydraulically and mechanically actuated spot-type disc brake. The adjusting device includes an adjusting spindle and an adjusting nut threaded together by a steep thread. The adjusting spindle is connected to the actuating piston and follows the axial piston movement without rotary motion. The adjusting nut rotates on the spindle for lining-wear adjustment. This rotation of the adjusting nut is accomplished by a spring biasing the adjusting nut against a low friction bearing at the cylinder bottom. To maintain handbrake clearance and to actuate the piston by the handbrake, a handbrake actuated mechanism engages the spindle-nut arrangement to prevent relative rotary motion of the two elements of this arrangement and at the same time causes axial motion of the arrangement to actuate the piston for brake application.

3,783,982

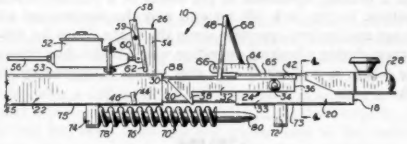
TELESCOPING TONGUE AND BRAKE ASSEMBLY FOR TRAILERS

Robert F. Wells, 1921 Kentucky, Lawrence, Kans.

Filed July 13, 1972, Ser. No. 271,390

Int. Cl. B60t 7/20

U.S. Cl. 188—112 14 Claims



A combination telescoping tongue and brake actuator assembly for brake-equipped trailers in which a first section of the tongue is reciprocally received by a second section and is held against extension beyond a predetermined limit by a releasable latch, yet is shiftable in an opposite direction, such shifting or shortening of the tongue causing the brake actuator to apply the trailer brakes. A spring-dampening structure yieldably maintains the two tongue sections biased in opposite directions relative to one another when the latch means is in engagement such that a certain predetermined compressive force must be achieved before the relative movement between the two sections is sufficient for an arm of the brake actuator

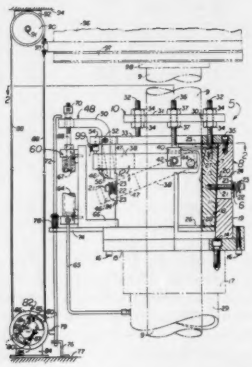
to cause the latter to actuate the brakes. When released, the latch permits the extension of the tongue beyond the predetermined limit. A chain interconnects the sections at their trailing, rearmost ends and determines the maximum extent to which the tongue may be lengthened.

3,783,983

HYDRAULIC JACK LIFT SAFETY BRAKE SYSTEM

John P. McNally, 3336 Duke, Kalamazoo, and Henry O. Neumann, Rt. No. 1, Mattawan, both of Mich.

Filed Jan. 19, 1971, Ser. No. 107,625
Int. Cl. F16d *59/00*
U.S. Cl. 188—189 **6 Claims**



In a hydraulic jack lift safety brake system having a safety brake for braking the downward travel of the jack shaft in the event of a malfunctioning condition in the jack lift system in which at least a pair of tapered brake shoes are driven on a taper during a braking operation to clamp against the jack shaft, improvement in said safety brake comprising an arrangement joining the brake shoes together so that they can be held together in a poised position out of contact with the jack shaft, mechanical advantage mechanism connected to and operative upon the arrangement joining the brake shoes together, a latch operative upon the mechanical advantage mechanism for latching a force against operation except during a braking operation so that the brake shoes are normally held in said poised position, the latch being actuatable to initiate a braking operation in the event of a malfunctioning condition in the jack lift system, and the mechanical advantage mechanism operative upon the brake shoes for driving them during a braking operation with a brake shoe driving force which is multiplied over that which is latched by the latch.

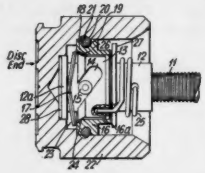
3,783,984

SELF-ADJUSTING DEVICE FOR DISC BRAKES

Wilhelm Knapp, Friedrichsthal, and Siegfried Ohmayer, Offenbach, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed July 20, 1972, Ser. No. 273,589
Claims priority, application Germany, Aug. 4, 1971, P 21 39 030.7
Int. Cl. F16d *65/56*
U.S. Cl. 188—196 BA **29 Claims**

This relates to self-adjusting devices to compensate for worn brake linings and more particularly to such self-adjusting devices as employed in a hollow disc brake piston. A more compact structure and economy of structural components are achieved in that the return spring is disposed between an abutting element concentric with the adjusting nut and an abutment secured to the end of the adjusting nut remote from the adjusting spindle.

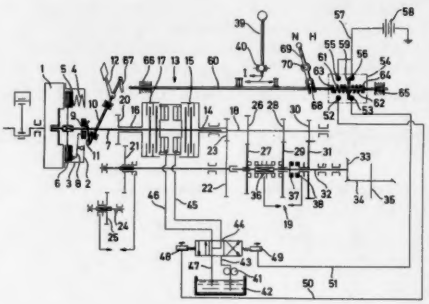


3,783,985

TRANSMISSION OVERDRIVE SHIFTED BY CLUTCH RELEASE

Oswald May, Bonn, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Koln-Deutz, Germany

Division of Ser. No. 79,011, Oct. 8, 1970. This application Dec. 30, 1971, Ser. No. 214,115
Int. Cl. B60k *21/00*; **F16h** *5/36*
U.S. Cl. 192—3.5 **2 Claims**



An arrangement including a master friction clutch selectively engageable and disengageable with respect to mechanism for controlling a multi-stage change gear transmission with a main gear control group. A control group is shiftable under load and is provided either preceding or following the main control group, in which the group shiftable under load has at least two forward stages with the step of progression of being considerably less than, for instance half, the step of progression of the main control group. During the shifting operation from one control stage to an adjacent control stage of the main control group, first the step of progression of the main control group is subdivided by the group shiftable under load and during the subsequent engagement of the next control stage of the main control group, the interposed control stage of the group shiftable under load is automatically shifted by operation of the master clutch.

3,783,986

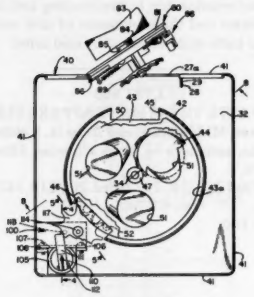
VENDING MACHINE WITH COUNTING MECHANISM

Waldo E. Bolen, Morris, Ill., assignor to The Northwestern Corporation, Morris, Ill.

Filed Mar. 9, 1972, Ser. No. 233,080
Int. Cl. G07f *11/00*
U.S. Cl. 194—2 **8 Claims**

A vending machine has a hollow base and a merchandise container supported thereby. A coin-actuated mechanism is preferably mounted on the front wall of the base and is ar-

ranged to operate a wheel which dispenses merchandise. A counting mechanism is mounted in the base and is operatively coupled to the dispensing wheel in such a manner that the counting mechanism is visible through an opening in the rear



of the base. Thus, the counting mechanism does not interfere with servicing of the coin-actuated mechanism and also is visible without gaining access to the interior of the vending machine.

3,783,987

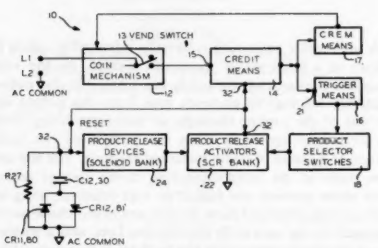
PRODUCT RELEASE CONTROL FOR A VENDING MACHINE

John A. Hanert, Buffalo Grove, and Gordon F. Severseu, Schaumburg, both of Ill., assignors to Televiso Electronics, Division of Domain Industries, Inc., Arlington Heights, Ill.

Filed June 16, 1971, Ser. No. 153,521

Int. Cl. G07f *11/00*

U.S. Cl. 194—10 **23 Claims**



A product release control means for a coin operated vending machine comprises a trigger capacitor which is charged, after the proper coins have been accepted by the machine and a product has been selected, to apply a turn-on firing voltage across the gate of a thyristor switch. A storage capacitor is then discharged, causing the energizing of a product release solenoid for dispensing the selected product.

3,783,988

AUTOMATIC POWER SUPPLY CONTROL APPARATUS FOR FLAT RATE ELECTRIC SERVICE SYSTEMS

Masao Kinemura, Matsue City, Japan, assignor to Koshei Arita, Minamimagome, Ohota-ku, Tokyo, Japan, a part interest

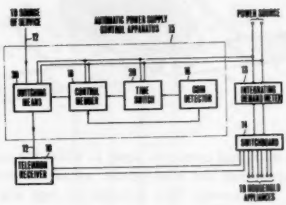
Filed June 20, 1972, Ser. No. 264,491

Claims priority, application Japan, June 26, 1971, 46/55600 (utility model)

Int. Cl. G07f *15/10*

U.S. Cl. 194—11 **3 Claims**

The customers of a service system purchase prescribed coins having a predetermined effective period from dealers of the service system and insert the coins in the apparatus installed in their houses. The automatic power supply control apparatus comprises a detector which functions to discriminate whether a coin inserted into the apparatus is a prescribed one or not for generating a detection signal only when the coin is a prescribed one, a time switch for generating



a first signal upon termination of the effective period of the prescribed coin, switching means connected between a source of service and utilization apparatus enjoying the service, and a control member responsive to the detection signal from the detector and to the first signal from the time switch for controlling the switching means.

3,783,989

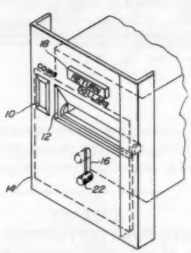
ESCROW AND SECURITY DEVICE FOR COIN AND DOLLAR BILL OPERATED VENDING MACHINE

Herman George Jensen, Chicago, Ill., assignor to The Seeburg Corporation of Delaware, Chicago, Ill.

Filed July 14, 1972, Ser. No. 271,731

Int. Cl. G07f *1/02, 7/04*

U.S. Cl. 194—4 G **10 Claims**



A door may be slid across the insert slot of a dollar bill validator for a vending machine to prevent removal of an inserted dollar bill during the validation and vending process. The door also closes the coin slot to prevent the insertion of coins after a dollar bill has been inserted. A locking arrangement is provided to prevent opening of the door until the dollar bill has been validated and transported to the cashbox. Once the vend of merchandise has been completed, the locking arrangement releases the door permitting the door to slide open for subsequent insertions of coins or dollar bills.

3,783,990

END TO END EGG TRANSFER MECHANISM

Anthony J. Siciliano, Vineland, N.J., assignor to Diamond International Corporation, New York, N.Y.

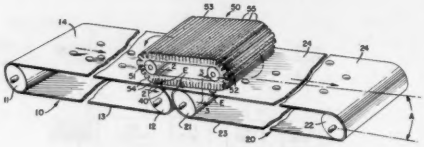
Filed Sept. 9, 1971, Ser. No. 179,003

Int. Cl. B65g *47/00*

U.S. Cl. 198—20 R **4 Claims**

A transfer mechanism for moving eggs or like objects across conveyor units disposed in end-to-end relationship comprising

in combination with said units a flat plate disposed between the ends of said conveyor units to close up the inherent gap therebetween and an endless transfer belt member disposed over the transfer zone at the adjacent ends of said conveyor units to yieldably grasp eggs or like objects in sandwiched relationship with said conveyor units to move the eggs or like objects thereacross and with gentle release of said eggs or like objects. The transfer belt includes an egg engaging surface made of spongelike material and is disposed at a slight inclination with respect to the belts of said conveyor units.



3,783,991

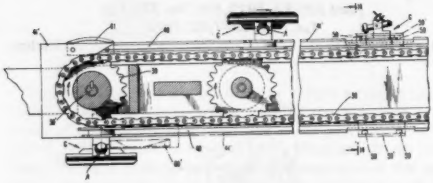
CONVEYOR

John U. McCahon, West Simsbury, Conn., and William J. Byrne, Pearl River, N.Y., assignors to Smyth Manufacturing Company, Bloomfield, Conn.

Division of Ser. No. 706,926, Feb. 20, 1968, Pat. No. 3,591,165. This application July 2, 1971, Ser. No. 159,227

Int. Cl. B65g *17/48, 47/24*

U.S. Cl. 198—33 AB **5 Claims**



Apparatus for conveying sheet material or the like in suspension comprising clamping means adapted to be opened, closed and rotated in response to movement thereof.

3,783,992

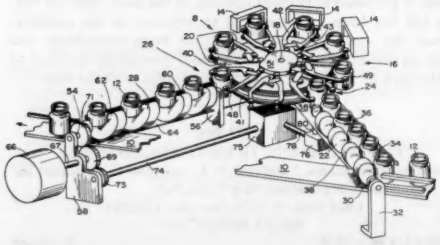
APPARATUS FOR POSITIONING ARTICLES

Charles W. Cook, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Filed Sept. 2, 1971, Ser. No. 177,236

Int. Cl. B65g *47/24*

U.S. Cl. 198—33 AB **10 Claims**



Apparatus for rapidly and accurately positioning articles, said apparatus being particularly well suited for positioning glassware for inspection purposes and includes a plurality of paired arms both of said arms in each pair being movable substantially equal distances between open and closed positions for sequentially engaging articles and positioning the same. Input and discharge screws are included to deliver and remove articles in timed relationship to the opening and closing movement of said arms and the movement of said articles along a predetermined path while engaged by said arms.

3,783,993

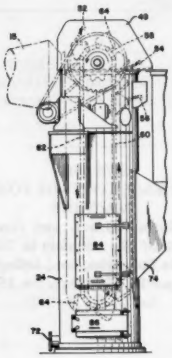
WASTE TREATMENT APPARATUS

William Herbert, Middletown, and Dean H. Kohlhepp, Dayton, both of Ohio, assignors to Block Clawson Fibreclaim, Inc., New York, N.Y.

Filed Jan. 18, 1972, Ser. No. 218,742

Int. Cl. B65g *17/12*

U.S. Cl. 198—140 **1 Claim**



A junker for removing relatively infrangible solids from a pulper of a solid waste treatment system. As the relatively frangible portions of the solids are treated in the pulper, the relatively infrangible portions pass from the pulper into the bottom of the junker through an interconnecting chute and are conveyed upwardly from the bottom of the junker by means of a series of chain mounted buckets. The top and bottom walls of the interconnecting chute diverge away from each other towards the junker so that relatively long objects, such as long pieces of pipe, do not jam in the chute as they are engaged by the upwardly moving buckets, and a washer-conveyor receiving solids from the buckets is suspended by cables so that it can swing away from the junker if abnormally large objects are carried through the junker. The chain carrying the buckets is trained about a sprocket rotatably mounted at the upper end of the junder and serving as the sole support for the chain. As a result, the chain hangs freely downwardly into the junker, so that if the buckets become jammed the chain may slip on the sprocket to decrease the possibility of damage to the unit.

3,783,994

CLIP STRUCTURE AND CONVEYING MEANS

Donald Ernest Tomalty, 209 Acadia Rd., Lachine, Quebec, Canada

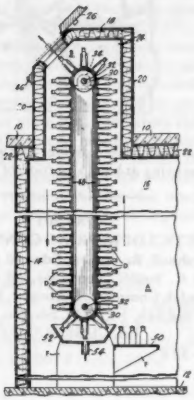
Filed Sept. 9, 1971, Ser. No. 179,115

Int. Cl. B65g *15/00*

U.S. Cl. 198—179 **7 Claims**

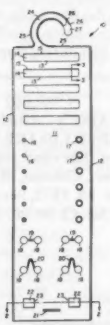
There is provided a conveying system for restaurants or the like for moving containers, e.g. bottles, from a storage and loading area to a point of use in the restaurant. This system includes spaced-apart first and second stations, conveying means movable between the first and second stations, the conveying means comprising an endless belt, spaced-apart rotata-

ble means on which said endless belt is mounted, and drive means for rotating at least one of the rotatable means, and a plurality of spaced-apart retaining clip means mounted on the endless belt. Each clip means is adapted to releasably retain a container therein, the clip means comprising a pair of spaced-



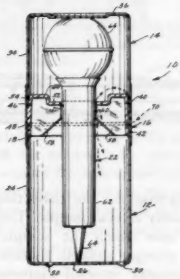
apart U-shaped members mounted in opposed relationship, each of said members comprising opposed tapering arms adapted to retain the body of a container and an intermediate arcuate arm connected to the tapering arms with the intermediate arcuate arm being adapted to retain the neck or top portion of the container.

3,783,995
TIE RACK
Robert A. Tobin, 67 Lake Bluff Rd., Rochester, N.Y.
Filed July 12, 1972, Ser. No. 271,071
Int. Cl. B65d *85/18*; **A47f** *5/08, 7/12*
U.S. Cl. 206—7 D **4 Claims**



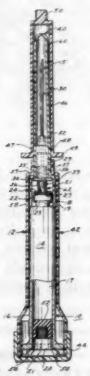
A tie rack specially suited for travel is formed of a sheet of plastic or leather having a hook and transverse openings with flaps near the top for holding ties. Other openings near the bottom hold cuff links, tie tacks, tie clips, rings and credit cards. A plastic sleeve, having an open bottom and a top central opening to receive the hook, is provided for covering the sheet, ties and articles.

3,783,996
SYRINGE PACKAGE
William L. Gerard, Overland, and John D. Ruck, St. Louis, both of Mo., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.
Filed Mar. 14, 1972, Ser. No. 234,560
Int. Cl. B65d *5/50, 85/00*
U.S. Cl. 206—17.5 **5 Claims**



A three-piece syringe package which, when separated, is adapted to contain a fluid for performing an irrigation procedure. The package has a tubular base portion and a tubular cap portion separated by a tubular collar, the latter having a central opening receiving the syringe. A sealing tape joins the base, cap and collar such that the interior of the package may be sterilized as a completed unit.

3,783,997
SYRINGE PACKAGE
Alexander M. Brown, Daytona Beach, Fla., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.
Filed Apr. 27, 1972, Ser. No. 248,222
Int. Cl. A61m *3/00*; **B65d** *85/54*
U.S. Cl. 206—43 **5 Claims**

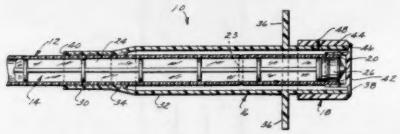


A package for a hypodermic syringe having a relatively shiftable barrel and needle assembly for arming the syringe is provided which includes a needle sheath engageable with the needle assembly for arming the syringe when unpackaged, and a sleeve member encircling the syringe and holding the proximal end portion of the sheath radially inwardly against a portion of the syringe to prevent inadvertent arming.

3,783,998
SAMPLING SYRINGE

Donald C. Brush, and Robert D. Oswald, both of Ballwin, Mo., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed Mar. 22, 1972, Ser. No. 236,877
Int. Cl. A61b *19/00;* **B65d** *85/54*
U.S. Cl. 206—43 **10 Claims**

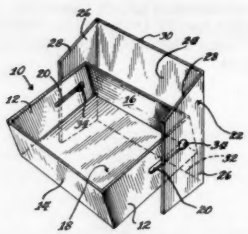


A sampling syringe for the collection and transport of a sample, particularly a fecal sample. The syringe comprises a syringe barrel into which the sample may be forced or aspirated by a plunger slidable therein. A sheath having a distal end of greater internal diameter than the external diameter of the barrel is slidable on the barrel and a cap sealingly closes both the distal ends of the barrel and sheath.

3,783,999
DISPLAY BOX WITH AN ATTACHABLE LID MOVABLE RELATIVE TO THE BOX

Leonard Richard Smith, Chicago, Ill., assignor to The S. K. Smith Company, Chicago, Ill.

Filed Oct. 4, 1971, Ser. No. 186,067
Int. Cl. B05d *5/52*
U.S. Cl. 206—45.23 **9 Claims**



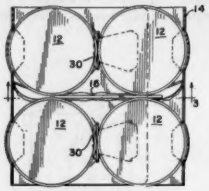
A display box with an attachable lid, which lid is movable to a cover position to close the top of the box and is movable to a vertical position to extend rearwardly of one of the ends of the box to support the box in an inclined display position and is also movable to a vertical position rearwardly and parallel to the bottom of the box to provide an open display box supported in an upright vertical position or in a horizontal position.

3,784,000
MULTIPLE UNIT CONTAINER PACKAGE WITH CONSUMER TOOL DIVIDER ASSEMBLY

William M. Brown, Darien, Conn., assignor to Federal Paper Board Company Inc., Montvale, N.J.

Filed June 21, 1971, Ser. No. 154,828
Int. Cl. B05d *71/00;* **B65d** *79/00*
U.S. Cl. 206—47 R **8 Claims**

A package characterized by two rows of product containers, such as, cans or jars, enclosed in an open ended tubular wrapper of foldable sheet material, with an assembly of spoons which are suitable for use in consuming the product packaged in the containers, which spoons are disposed between the rows

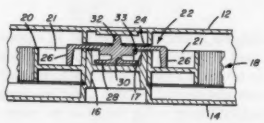


of containers so as to form a divider and which are not accessible without removing at least a portion of the wrapper.

3,784,001
ANTICLOCKSPRING CONNECTOR

Clifford B. Bushnell, Rochester; Edward J. Sheffer, Caledonia, and Robert C. Sutliff, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 14, 1972, Ser. No. 226,007
Int. Cl. B65d *85/67*
U.S. Cl. 206—52 F **7 Claims**

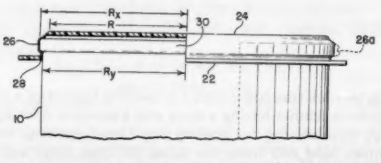


In a film cartridge having a core support hub extending at least partially through the film core, clockspringing of a roll of film therein is prevented by providing a frangible connector between the core and a portion of the cartridge which has sufficient strength to prevent the core from rotating during shipping but which will break as the film is withdrawn from the cartridge, permitting the core to rotate. The frangible connector is formed of a molded plastic insert arranged to engage both the core and the cartridge and having a necked-down portion which will fracture when a sufficient force is applied thereto, as by pulling the film from the cartridge. At the same time, the necked-down portion is sufficiently strong to prevent clockspringing of the film during shipment.

3,784,002
MULTIPLE CONTAINER CARRIER AND INDIVIDUAL CONTAINER LID ARRANGEMENT

Ronald Charles Owen, Harwood Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Apr. 20, 1972, Ser. No. 246,037
Int. Cl. B65d *71/00*
U.S. Cl. 206—65 C **10 Claims**



A multiple container package for cans and the like having outward chime, rim or bead formations at the upper ends thereof and in which there is provided a carrier in the form of

a resilient deformable sheet of plastic material preformed to provide downwardly open recessed pockets receiving the upper end portions of containers arranged in side by side relationship in the package with the material around the open end of each pocket stretched to pass over an associated chime or rim formation and then resiliently contracted as a gripping edge in engagement with the container wall beneath the chime formation for assembly of the containers in the package and transport thereof, the material of the plastic sheet forming the closed end of each pocket being joined to the adjacent gripping edge by a substantially inert or relaxed annular wall portion which has been stretched beyond its elastic limit; and the carrier sheet being provided with weakened web portions between adjacent containers in the package permitting selective removal of one or more containers from the package with the remnant recessed sheet material remaining attached thereto and separately removable to permit opening of the container proper and dispensing of the contents thereof and then reusable as a reclosure lid for the opened container where only part of the contents has been dispensed.

3,784,003

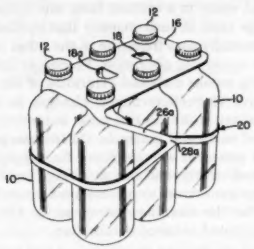
BOTTLE CARRIER

Herbert S. Bolton, 8501 W. Higgins Rd., Chicago, Ill.

Continuation of Ser. No. 78,527, Oct. 6, 1970, abandoned. This application Sept. 22, 1972, Ser. No. 291,517

Int. Cl. B65d *71/02, 85/62*

U.S. Cl. 206—65 E **6 Claims**



A carrier for a plurality of containers in package form, such as a six-pack, and including a sheet of elastic material apertured in accordance with the number of containers to be supported thereby and defining constrictive apertures to receive and snugly engage the upper ends of corresponding containers; and further including a band portion initially disposed around the carrier sheet in substantially the plane thereof and integral therewith at frangible and generally permanent connection areas with the frangible areas breaking when the band portion is moved downwardly to encircle and confine the intermediate body portions of the packaged containers and with the generally permanent connection areas then forming inclined strap portions connecting the band portion to the carrier sheet.

3,784,004

SKIN PACKAGING PROCESS AND SKIN PACKAGE THEREOF

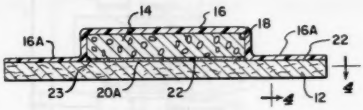
Melvin H. Meyer, Maywood, Ill., assignor to Stone Container Corporation, Chicago, Ill.

Filed Feb. 28, 1972, Ser. No. 229,776

Int. Cl. B65d *73/00, 75/36*

U.S. Cl. 206—80 A **13 Claims**

A method of making a skin package which comprises carding an article on a substrate of porous or air-permeable material having a meltable, thermoplastic barrier coating subtending the article which renders the substrate substantially impervious to passage of air or moisture therethrough; feeding the substrate with carded article to the vacuum forming station of a skin packaging machine concurrently with the feeding of said article-bearing substrate and a thermoplastic film below a heater assembly sufficiently to raise the temperature of the film above the melt temperature thereof and permit the radiant heat from the heater assembly and the film to raise the temperature of the barrier coating above its melt temperature with exception of that part of the barrier coating immediately subtending said article; said parts of the substrate which have



melted barrier coating thereon being impregnated therewith and thereby being rendered pervious to air so as to permit a vacuum draw through the substrate for vacuum forming the softened plastic film around the article and laminating same to the substrate. The resulting skin package has an air impervious area immediately below the carded article provided by the unmelted coating which thereafter functions as a moisture vapor barrier for the film encased article.

3,784,005

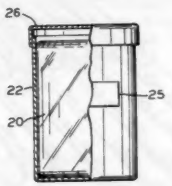
ADDITIVE PACKAGE AND METHOD OF COMPOUNDING RESINS THEREWITH

Malcolm Scott C. McVay, Aurora, Ohio, assignor to U.S. Chemicals and Plastics, Inc., a division of Alco Standard Corporation, Canton, Ohio

Continuation-in-part of Ser. No. 10,316, Feb. 10, 1970, abandoned. This application Dec. 20, 1971, Ser. No. 210,018

Int. Cl. B65d *81/32*

U.S. Cl. 206—84 **12 Claims**



A package to contain materials to be added to a resin formulation containing vinylic monomer comprises a thin-walled plastic envelope which is soluble in the resin formulation. Preferably the envelope is made of polystyrene film. The polystyrene envelope is formed from sheet stock over a hot mandrel by sliding a rigid container onto the mandrel over a sheet of flexible plastic film overlying the mandrel. The sheet of film is large enough to form a lining for the rigid container with flaps of the film protruding from the rigid container. After materials are placed inside the lined rigid container, the flaps are sealed to form an enclosed film package within the rigid container. Additive materials which would themselves dissolve or attack the plastic envelope may be carried in an inert vehicle and/or be coated with an inert coating material to protect the envelope during storage.

3,784,006

DRAGEE SORTING APPARATUS

Hans Braun, Ilvesheim, Germany, assignor to Boehringer Mannheim, GmbH, Postfach, Germany

Filed June 28, 1972, Ser. No. 266,959

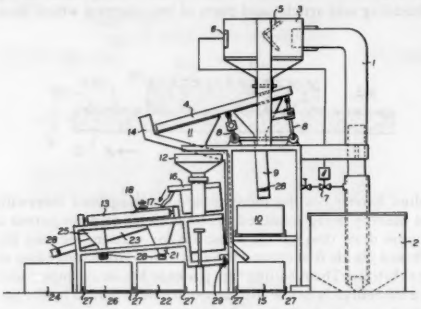
Claims priority, application Germany, July 8, 1971, P 21 33 968.4

Int. Cl. B07c

U.S. Cl. 209—73 **8 Claims**

Apparatus for sorting dragees according to diameter and thickness of the dragees, which apparatus comprises, in com-

bination, (a) plate-type sorting means comprising a perforated surface adjustable in tilt and oscillatable and disposed to receive the dragees to be sorted and, disposed therebelow, (b)



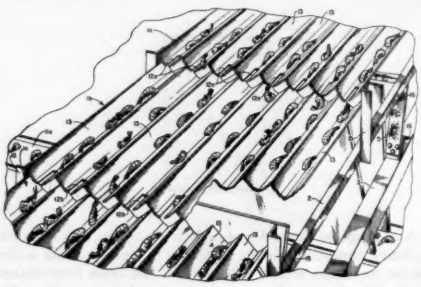
roller-type sorting means comprising a plurality of substantially parallel rollers wherein adjacent rollers rotate in opposite directions and wherein the spacing between said rollers is steplessly adjustable.

3,784,007

DYNAMIC SHRIMP GRADER AND GRADING METHOD

Raphael Q. Skrmetta, 4610 Press Dr., New Orleans, La.

Filed July 31, 1972, Ser. No. 276,391
Int. Cl. B07b *13/04*
U.S. Cl. 209—85 **13 Claims**



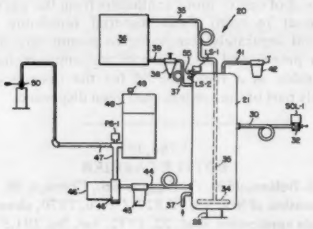
A dynamic shrimp grader and grading method of universal application to all types of shrimp which in a first embodiment (FIGS. 1–6) utilizes a series of sequential, slightly inclined trays, each hving a number of parallel V-shaped channels with grading slots at their end. The trays are mounted on an upper frame which is driven by an eccentric drive upwardly and simultaneously forwardly with respect to the grader's basic support structure, imparting a dynamic action, the upper frame and basic support structure being connected together by a number of angularly disposed, flexible reinforced fiberglass strip springs. Shrimp enter at the top of the grader moving down the channels under the dynamic action of the moving trays and are graded by their width, the smaller falling through the slots in the upper trays, the slot width and length becoming larger from each upper tray to the succeeding lower tray. The shrimp are aligned generally vertically by the sides of the channel and have a tendency to flatten out under the dynamic action of the trays as they progress down the channel (FIG. 8A–8C). The V-shaped channels are formed by means of joining together an alternating series of flat strips (FIG. 5) or alternatively by appropriately bending a single strip (FIGS. 5A). A second embodiment (FIG. 7) utilizes a single flat tray with a staggered series of progressively larger, grading holes therein in place of the trays with the V-shaped channels of the first embodiment.

3,784,008

OZONATING APPARATUS FOR DRINKING WATER

Vincent R. Troglione, Meadville, Pa., assignor to Moody Aquamatic Systems, Inc., Meadville, Pa.

Filed Aug. 20, 1971, Ser. No. 173,552
Int. Cl. B01d *21/24*
U.S. Cl. 210—104 **8 Claims**



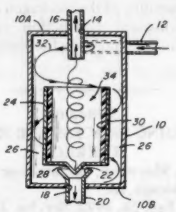
With this apparatus ozone gas is automatically applied to contaminated water in a contact tank, and is then transferred to a discharge tank in such manner that contaminated water cannot accidentally pass from one to the other tank, when the system is on automatic operation. Electrical controls responsive to sensing means disposed exteriorly of the contact tank, and responsive to predetermined changes in the weight or level of the water in the contact tank, automatically replenish the supply of ozonated water in the discharge tank, when necessary. A system is also disclosed for supplying ozone gas to a system selectively, and one at a time, from one of a plurality of ozone generators to prevent undue overloading of the generators, but the circuit to pump motor 46' may be temporarily interrupted as noted hereinafter.

3,784,009

HYDROCLONE FOR SEPARATING AN IMMISCIBLE HEAVY PHASE FROM A LIGHT PHASE LIQUID

L. Andrew Maciula, Stillwater, Okla., assignor to Oklahoma State University, Stillwater, Okla.

Filed Dec. 13, 1971, Ser. No. 207,047
Int. Cl. B04c *5/04*
U.S. Cl. 210—114 **9 Claims**



A hydroclone for separating an immiscible heavy phase from a light phase liquid including an upright cylindrical chamber having a tangentially intersecting inlet, an axial light phase outlet at the upper end thereof, a heavy phase outlet in the lower end, an opened top cylindrical interface member within the cylindrical chamber having an exterior diameter

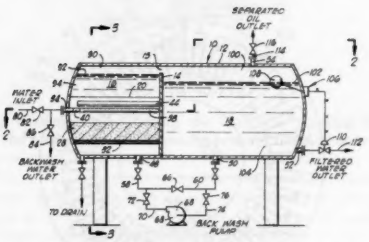
providing an annulus area between the interface member and the wall of the cylindrical chamber forming a passageway whereby heavy liquid cast outwardly by centrifugal force of circular liquid flow in the cylindrical chamber flows downwardly to the lower portion of the cylindrical chamber, and means of controlling the discharge of liquid from the heavy phase outlet in response to the level of heavy phase liquid in the cylindrical chamber.

3,784,010

APPARATUS FOR SEPARATING OIL AND SOLIDS FROM WATER

Frank J. Barra, Midwest City, Okla., and Kenneth R. Murrell, Odessa, Tex., assignors to Black, Sivalls & Bryson, Inc., Oklahoma City, Okla.

Filed Aug. 23, 1972, Ser. No. 283,180
Int. Cl. B01d *23/26*
U.S. Cl. 210—114 **5 Claims**



The present invention relates to improved apparatus for separating oil and solids from a stream of water. A closed vessel is provided having a first vertical partition disposed therein dividing the vessel into first and second compartments. A second vertical partition is disposed within the lower portion of the first compartment dividing it into two separate filter areas and a filter bed is disposed in each of the filter areas. An inlet water connection is provided extending to within the first compartment, and a pair of slotted inlet water distribution conduits are disposed in the first compartment, each positioned horizontally within a filter area centrally above a filter bed. The slotted water distribution conduits are connected together and to the inlet water connection. Means for removing separated oil from the first compartment are provided therein and a pair of filtered water outlet connections are provided, each disposed in a filter area below a filter bed. Filtered water inlet and outlet connections are disposed in the bottom portion of the second compartment, and conduit means for conducting filtered water between the first compartment and the second compartment are connected to the first compartment filtered water outlet connections and the second compartment filtered water inlet connection. A backwash pump is connected to the conduit means and valve means are provided in the conduit means for controlling the flow of filtered water from the first compartment to the second compartment, and the flow of backwash water from the second compartment separately to the filter areas of the first compartment.

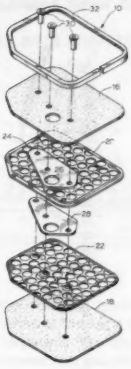
3,784,011

AUTOMATIC TRANSMISSION FLUID FILTER

Elmer E. Ward, Lake Forest, Ill., assignor to F. P. Smith Corporation, Melrose Park, Ill.

Filed Apr. 28, 1972, Ser. No. 248,695
Int. Cl. F01m *11/00;* **B01d** *35/06*
U.S. Cl. 210—168 **8 Claims**

An automatic transmission fluid filter having an outlet port for supplying filtered fluid to the intake of an automatic transmission and including a filtering medium which is held by a support means. A cavity is formed between the filtering medium and the support means with the cavity receiving filtered automatic transmission fluid which has passed through the filtering medium. A magnetic material surrounds the outlet port



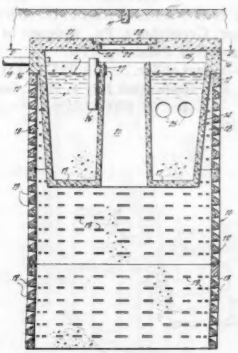
and attracts magnetic particles in the filtered fluid and is positioned out of the direct flow of the filtered fluid to prevent the washing away of magnetic particles attracted to the magnetic material.

3,784,012

SEPTIC TANK CONSTRUCTION

Henry B. Carlson, 95 Broadview Ave., Kings Park, N.Y.

Filed Mar. 31, 1972, Ser. No. 240,138
Int. Cl. C02c *1/14*
U.S. Cl. 210—170 **5 Claims**



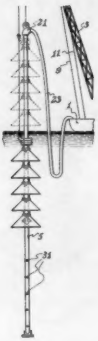
Precast concrete septic tank constructions and their assembly with leaching pools are disclosed wherein important economies in construction are obtained as well as improved efficiency and better access. In its preferred form the septic tank is supported inside the leaching pool from the top of the wall thereof, the wall being made of sanitary drain rings which provide rows of apertures for diffusion of effluent into the surrounding earth.

3,784,013

MULTI-UNIT APPARATUS FOR COLLECTING OIL FROM THE SURFACE OF A BODY OF WATER

William H. Daniel, 541 Putman Rd., Rogers, Ark.

Filed Feb. 8, 1971, Ser. No. 113,555The portion of the term of this patent subsequent to June 6, 1989, has been disclaimed.
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 5 Claims



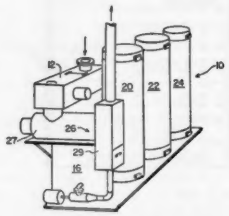
Oil is collected from the surface of a body of water by immersing a tent-shaped collector from above the surface of the water to a depth such that the hydrostatic pressure of the oil in the collector will pump oil to an elevation above the surface of the water and into a collection receptacle. The collector slides vertically on a conduit and delivers the oil into the lower end of the conduit, the lower end of the conduit being positioned at a depth which determines the height to which the oil can be pumped above the surface of the water. The tent-shaped collector is in the form of a plurality of superposed coaxial cones mounted on a sleeve that slides on a hollow multiperforate stem.

3,784,014

WASTE AND WATER TREATMENT SYSTEM

Abner B. Turner, Greensburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 80,985, Oct. 15, 1970, Pat. No. 3,716,159. This application July 1, 1971, Ser. No. 158,852
Int. Cl. B01d *17/06*
U.S. Cl. 210—263 3 Claims



A device for the separation of particulate matter including colloidal particles from a liquid medium consisting of a conveyer belt composed of tightly coiled springs, a dry chemical feed system, a surge conditioning tank, an incinerator and a plurality of filtration columns. The columns include a bimetallic medium which separates particles electrophoretically, for example electrically conductive metallic alluminum powder and electrically conductive carbon granules.

ERRATUM

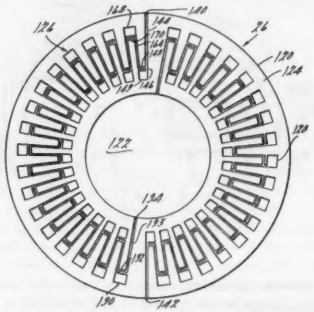
For Class 210—321 see:
Patent No. 3,784,470

3,784,015

FILTER

Walter Kasten, Franklin, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 24,778, April 1, 1970, abandoned. This application Feb. 17, 1972, Ser. No. 227,642
Int. Cl. B01d *43/00*
U.S. Cl. 210—322 7 Claims



A stacked washer multi-stage impaction and centrifugal separation filtering apparatus with a filter element composed of flat washers having a channel system formed thereon utilizing particle collection pockets to remove and store contaminants.

The purpose of the foregoing abstract is to enable the Patent Office and the public generally, and especially the scientists, engineers or practitioners in the art who are not familiar with patent or legal terms or phraseology, to determine quickly from a cursory inspection the nature and essence of the technical disclosure of the application. The abstract is neither intended to define the invention of the application, which is measured by claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,784,016

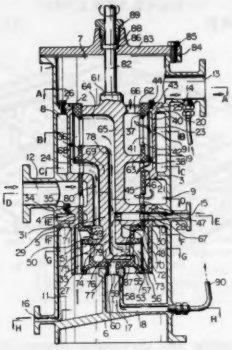
AUTOMATIC CONTINUOUSLY BACKFLOW WASHING-TYPE FILTER

Jiro Akiyama, Yokohama, Japan, assignor to Kanagawa Kiki Kogyo Co., Ltd., Yokohama-shi, Japan

Filed May 16, 1972, Ser. No. 253,871
Claims priority, application Japan, June 30, 1971, 46/56187
Int. Cl. B01d *33/02*
U.S. Cl. 210—333 1 Claim

An automatic backflow washing-type filter comprising a primary filtering unit a substantial area portion of which is employed to primarily filter a charge of oil to be filtered, a filtrate accumulation unit for accumulating and supplying a substantial portion of the filtrate from said primary filtering unit to a consuming device and for recycling the remaining minor portion of the filtrate as a backflow washing filtrate. This washing filtrate washes the primary unit to remove foreign matter deposited on the primary filtering unit. In addition, the device includes a secondary filtering unit for filtering said backflow

washing filtrate containing foreign matter after the washing of the primary filtering unit, the secondary filtering unit also



being washed while filtering the backflow washing filtrate from the washing operation on the primary filtering unit.

3,784,017

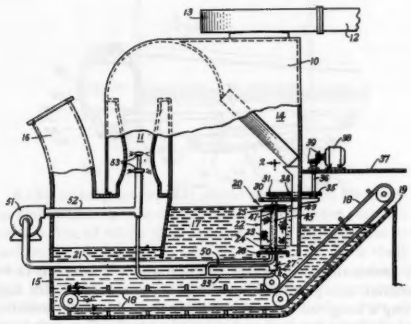
LIQUID-SOLIDS SEPARATOR

Orlan M. Arnold, Grosse Pointe Park, Mich., and Carlo A. Vancini, Stamford, Conn., assignors to Peabody Engineering Corporation, New York, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,048

Int. Cl. B01d *33/06*

U.S. Cl. 210—354 **16 Claims**



A liquid-solids separator comprising a rotating drum having a perforated peripheral surface immersed in the liquid. Liquid is drawn in through the peripheral screen and discharged through an axial pipe. A reverse flush is provided by an elongated liquid jet directed against the interior of the perforated wall and enmeshed particles are removed by an outside scraper blade or by a rotating outer brush. The device is particularly adapted for use in the reservoir of a gas washing unit for removing particulate material from the wash liquid.

3,784,018

APPARATUS FOR THE CONTINUOUS SEPARATION OF FINE PARTICLES FROM LIQUOR

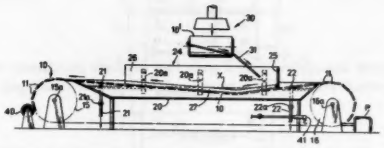
William Ernst Hope; Mary Jarvie Hope, both of 56 Merryvale Ave., Giffnock, Scotland, and Thomas William McNeil, 6 Wayside Acres, Bodelwydden, Great Britain

Filed Jan. 24, 1972, Ser. No. 219,946

Claims priority, application Great Britain, Feb. 2, 1971, 03673/71

Int. Cl. B01d *33/04, 35/16*

U.S. Cl. 210—393 **6 Claims**



The invention provides filtering apparatus capable of continuous operation and without the need for shut down periods for cleaning the filter elements. The apparatus broadly comprises an endless filter conveyor, means for driving said conveyor at an appropriate speed, a catchment tank wherethrough a part at least of the operative run of said conveyor is guided below the liquid level in said catchment tank, retaining walls the lower edges whereof are in contact with said filter conveyor, means for directing liquid to be treated onto said conveyor within the confines of said retaining walls, an outlet in said catchment tank for removing treated liquid, and means for removing deposited solids from the filter conveyor.

3,784,019

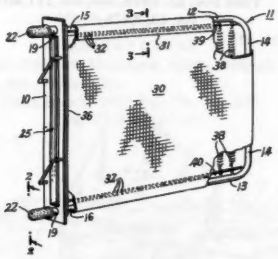
BAG FILTER UNIT

George Gordon, III, Glenbrook, Conn., assignor to Peabody Engineering Corporation, New York, N.Y.

Filed Apr. 5, 1972, Ser. No. 241,329

Int. Cl. B01d *29/14*

U.S. Cl. 210—486 **3 Claims**



A bag filter unit for a filter module comprising a front plate carrying a U-shaped frame which supports a bag filter element. The fabric filter element is formed with overlapped seams having rows of stitches at the edges of the overlapped fabric which are spaced to lie beyond the frame elements so as not to increase the overall thickness of the fabric which is contacted by such elements. The elements are spring pressed to hold the filter bag under tension and to relieve strains on the bag due to variations in size or shrinkage.

3,784,020

TELESCOPING CLOTHES DRYER STRUCTURE

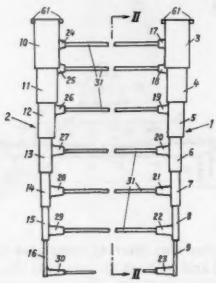
Walter Steiner, Oberseeverstrasse 14, Winterthur, Switzerland

Filed Feb. 14, 1972, Ser. No. 225,954

Claims priority, application Switzerland, Feb. 12, 1971, 2080/71

Int. Cl. A47b *53/00*

U.S. Cl. 211—1.3 **10 Claims**



A plurality of interengaging sliding, hollow elements of essentially rectangular cross-sectional area are so arranged that the hollow profiles have guide surfaces formed on the outside and the inside, the profiles being additionally formed with inter-engaging projections and recesses at the horizontal sides of the rectangular profiled elements, so that the weight of clothes being hung on the dryer is accepted by the guide surfaces, and the guide surfaces do not distort. Preferably a pair of parallel arms are provided with rods interengaging the arms, secured to stubs attached to the telescoping interengaging elements, the stubs sliding in open notches formed in adjacent telescoping elements, to form a rigid assembly, which can support the weight of laundry hung thereon, without deformation.

3,784,021

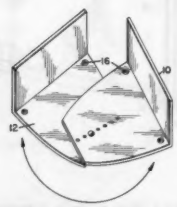
BOOKRACK

Margaret F. Mark, P.O. Box 1267, Chicago, Ill.

Filed Dec. 23, 1971, Ser. No. 211,405

Int. Cl. A47b *65/00*

U.S. Cl. 211—43 **4 Claims**



A self-contained bookend-bookrack structure, adjustable in width, and also adjustable in angle of relationship between the vertical ends, so as to accommodate books but more especially ring-binders or binders containing many or thick pasteups wherein the covers are not necessarily parallel but may form either an acute or an obtuse angle when the covers are closed.

3,784,022

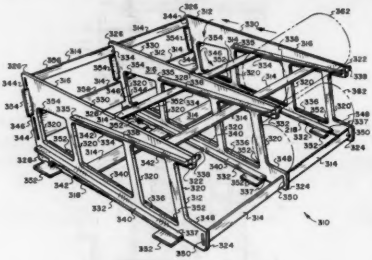
PORTABLE AND DISPOSABLE DISPENSING PACKAGES

William N. Beesley, Jr., 2755 Apple Blvd., Salt Lake City, Utah

Continuation-in-part of Ser. No. 114,284, Feb. 10, 1971, abandoned. This application Mar. 22, 1972, Ser. No. 237,192

Int. Cl. A47f *7/00*

U.S. Cl. 211—49 D **1 Claim**



Two tier portable and disposable dispensing packages of cardboard or plastic construction including upper and lower tapered ramps connected by a chute and flanked by side panels for storage and sequential dispensing of canned or cylindrically-encased food or drink. The packages are also collapsible and can be manually carried in hand from place to place. Some packages may be vertically coupled together such that two tier packages may form a continuous multitier dispensing unit for receiving and dispensing cylindrical containers.

3,784,023

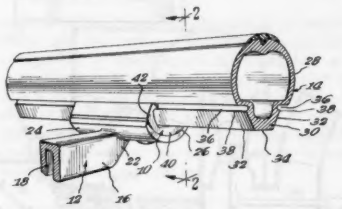
HANG RAIL SUPPORT STRUCTURE

Albert S. Varon, and Burton L. Siegal, both of Skokie, Ill., assignors to Crown Metal Manufacturing Co., Chicago, Ill.

Continuation-in-part of Ser. No. 93,091, Nov. 27, 1970, Pat. No. 3,685,662. This application Aug. 30, 1971, Ser. No. 176,224

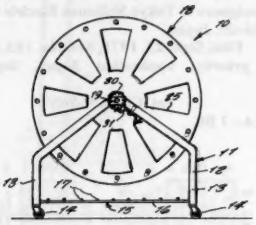
Int. Cl. A47f *5/00*

U.S. Cl. 211—105.1 **3 Claims**



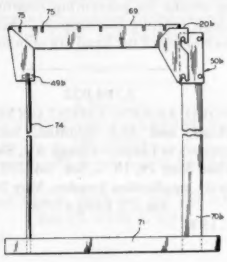
A connecting member or adapter which is adapted to be connected to a generally horizontal support member for supporting a hang rail has a generally C-shaped bracket member secured at the forward end thereof with the C opening upward. The C-shaped bracket member is preferably extruded and formed of a synthetic resin that has substantial rigidity but nevertheless has sufficient resilience so that the arms of the member can yield slightly. A hang rail is carried by the C-shaped bracket member, the hang rail comprising a tubular, extruded shape having a protruding rib along its bottom side, there being grooves formed at the juncture of the rib with the body of the hang rail. The body is substantially cylindrical in configuration. In mounting the hang rail, the ends of the arms of the C-shaped bracket member are spread apart to pass over the rib after which they snap into engagement with the grooves and firmly lock the hang rail onto the C-shaped bracket member. The said ends have hooklike enlargements to engage beneath the widest part of the rib in the grooves.

3,784,024
ROTARY BUFFET WHEEL
Joseph Kristy, Box 1440, Yellowknife, N.W. Territories, Canada
Filed May 9, 1972, Ser. No. 251,814
Int. Cl. A47f 3/14, 5/02
U.S. Cl. 211—131 2 Claims



A ferris-wheel shaped display device for various foods such as may be served at a party, the device comprising a rotatable reel supporting a plurality of trays each of which contains a different food, the reel being supported upon a frame that can be moved along a floor upon small wheels or casters.

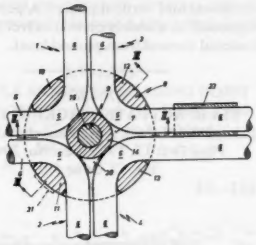
3,784,025
SHELF SUPPORT LEG LOCK BRACKET
Joseph P. Dumit, Chicago, Ill., assignor to Atco Corporation, Chicago, Ill.
Filed Sept. 28, 1971, Ser. No. 184,430
Int. Cl. A47f 5/00
U.S. Cl. 211—148 9 Claims



A clip or snap-on bracket allows a shelf to be removably attached to the top of a vertical post. The bracket includes two parts, a first of which slips over the top of the post and has attachment pins for giving support to a cantilevered shelf, extending from either or both the right or the left sides of the post. Also, suitable connectors on this bracket give horizontal stabilization on either or both sides. The other part of the bracket is a very low cost folded piece of metal, which hangs on the pins of the first bracket.

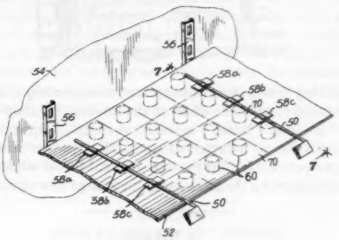
3,784,026
CONNECTING ELEMENTS FOR WIRE FRAMES
Wolfgang C. F. Grosse, Seestrasse, Au near Zurich, Switzerland
Filed Apr. 10, 1972, Ser. No. 242,484
Claims priority, application Germany, Apr. 22, 1971, P 21 19 585.7
Int. Cl. A47f 5/14
U.S. Cl. 211—181 12 Claims

A connecting element similar to a snap fastener for securing two to four laterally adjacent and/or superimposed wire frames at their upper and/or lower end corners to each other,



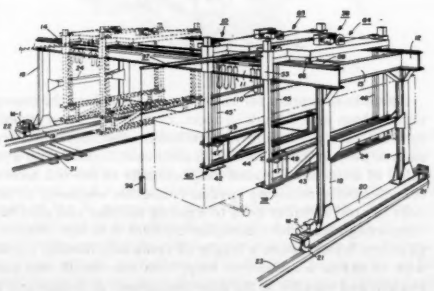
the connecting element including a pair of opposed members having projection means abuting the corners of the frames.

3,784,027
DISPLAY DEVICE AND METHOD OF MERCHANDISING AND INVENTORY CONTROL
Ronald J. Gold, Spring Valley, N.Y., assignor to Uni-Systems, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 1,764, Jan. 9, 1970, Pat. No. 3,645,485. This application May 13, 1971, Ser. No. 142,995
Int. Cl. A47f 5/00
U.S. Cl. 211—184 8 Claims



Display device having support means and indicating means which enables a merchandise inventory control system to be easily maintained.

3,784,028
GANTRY CRANE
Kenneth James Stewart, Muskegon, Mich., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed June 9, 1972, Ser. No. 261,470
Int. Cl. B66c 17/06
U.S. Cl. 212—11 10 Claims



A heavy duty gantry crane suitable for railroad piggyback operations. Forming the bridge is a pair of spaced apart paral-

lel girders supported on steel legs and wheeled trucks for operating over runway rails. Interconnecting trolleys laterally positionable on the bridge operate lift forks in controllably guided horizontal and vertical planes. A pendant push-button station connected to a widely pivotal swivel boom enables one man operational control from ground level.

3,784,029

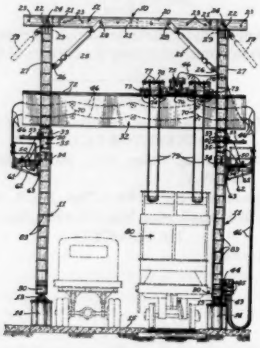
FLUID ACTUATED JACKING FRAME

Cecil A. Pelts, 2500 N. 24th Ave., Phoenix, Ariz.

Filed Oct. 12, 1972, Ser. No. 296,890

Int. Cl. B66c *5/02*

U.S. Cl. 212—14 **11 Claims**



A jacking frame for hoisting and transporting cargo from one position to another wherein the hoisting mechanism comprises a load beam moved vertically upwardly and downwardly in an inverted U-shaped bridge like structure by two rams providing step by step vertical travel while periodically repositioning themselves on the bridge like structure.

3,784,030

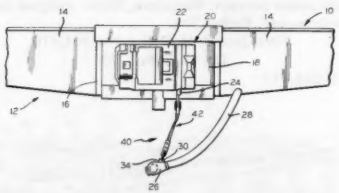
AIR HOSE SUPPORT FOR CUSHION CARS

Osvaldo F. Chierici, Elmhurst, Ill., assignor to Holland Company, Elmhurst, Ill.

Filed May 8, 1972, Ser. No. 251,405

Int. Cl. B61g *5/08*; **F16l** *3/16*

U.S. Cl. 213—76 **9 Claims**



An air hose support for cushion cars, to replace the conventional chain and S-hook support, comprising a rod member formed from a resiliently stretchable elastomeric material, such as polyurethane, having its ends each formed with a plurality of cross holes spaced longitudinally of the rod member for selectively receiving special connector elements to connect the rod member ends to existing coupler and glad hand supporting lugs. Each connector element is of one piece construction formed from a length of resiliently flexible but stiff wire to define a rectilinear loop, with one length end being straight and parallel to the loop throughout its length and the other length being similarly parallel and straight to an end portion which is at right angles to the first length end and is formed with a hooked portion into which the first length end is snapped to close the loop. The connectors are formed to be disposed in locking relation to the rod member end they are secured to when the support is in its operative position.

3,784,031

MACHINE FOR PERFORMING WORK

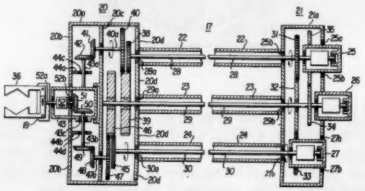
Moritada Niitu, Kawasaki, and Toshio Ide, Tokyo, both of Japan, assignors to Tokyo Shibaura Electric Company, Ltd., Kawasaki-shi, Japan

Filed Sept. 23, 1971, Ser. No. 183,141

Claims priority, application Japan, Sept. 25, 1970, 45/83371

Int. Cl. B63c *8/00*

U.S. Cl. 214—1 BC **5 Claims**



In a machine for performing work characterized by a manipulator arm having a working hand rotatably carried in a frame rotatably mounted in a support and gear train means for rotating the hand, the frame and the support to permit bending and swivelling motions of the hand. A transmission gearing arrangement is provided between the frame rotating means and the hand rotating means to prevent rotating the hand through rotating the frame, and another transmission gearing arrangement connects the support rotating means and the frame rotating means for preventing rotating the frame and the hand through rotating the support, whereby undesirable bending and swivelling of the hand are eliminated.

3,784,032

HOIST ARRANGEMENT ON SHIPS

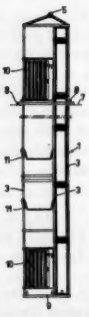
Tage Westerlund, and Jarl Hedman, both of Skelleftea, Sweden, assignors to Linden-Alimak AB, Skelleftea, Sweden

Filed May 19, 1972, Ser. No. 255,114

Claims priority, application Sweden, May 26, 1971, 6796/71

Int. Cl. B65g *67/58*

U.S. Cl. 214—15 R **1 Claim**



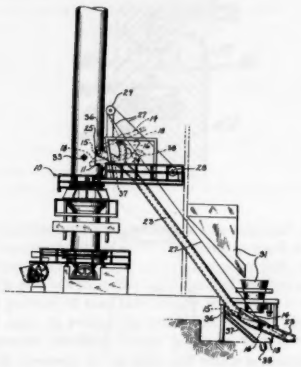
This invention relates to a hoist arrangement of the kind intended for use on ships and comprising a lift cage guided by a vertical frame and movable therein.

3,784,033

VIBRATORY FURNACE CHARGING APPARATUSES

Francis T. Kaiser, and Robert R. Schanen, both of Port Washington, Wis., assignors to Modern Equipment Company, Port Washington, Wis.

Filed Feb. 17, 1972, Ser. No. 227,043
Int. Cl. B66c 17/08
U.S. Cl. 214—19 3 Claims



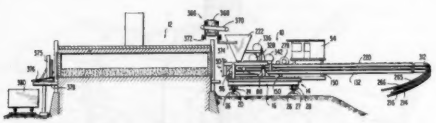
An apparatus for introducing a charge into a metal melting furnace, featuring a wheeled skip car supporting a spring-suspended charge bucket provided with a vibrator and adapted to have the charge ingredients weighed externally of said skip car and bucket unit prior to being deposited therein, said skip car being designed to be mechanically elevated on inclined tracks to a position projecting into the furnace charging doorway where said car can be adjustably tilted to discharge the bucket contents into the furnace while simultaneously actuating the vibrator to impart a vibratory motion thereto promoting the evacuation of the charge under control with a minimum of force and reduced charge door size requirements.

3,784,034

COKE OVEN PUSHING AND CHARGING MACHINE AND METHOD

Buster Ray Thompson, Rt. No. 1, Lowes Ferry Pike, Louisville, Tenn.

Filed Apr. 4, 1972, Ser. No. 240,937
Int. Cl. C10b 31/08
U.S. Cl. 214—21 20 Claims



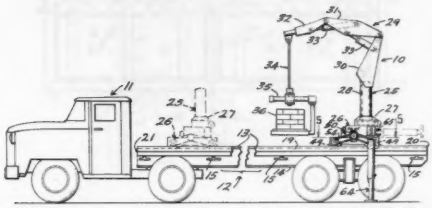
A combined coke oven pushing and charging machine is supported on tracks for movement along the front of a bank of coke ovens and is operable to open an oven door, push the coke from the open oven, and close the oven door, and to open the door of an adjacent empty oven, charge the oven with a uniform, level, compact charge of coal, and close the door. The machine is then moved along the track a distance equal to the width of one oven, a second oven is pushed, and the oven previously pushed is charged. The pusher head is provided with roller supports adapted to roll along the oven floor during the pushing operation, and the head is water cooled to prevent warping and damage by the intense heat of the coke. The coal is deposited into the empty ovens by a drag-type endless chain conveyer having a width substantially equal to the width of the coking chambers and which is telescoped into the oven from the pusher door opening. The generally horizontal cantilevered conveyer simultaneously fills, levels, and compacts the coal in the coking chamber.

3,784,035

VEHICLE MOUNTED LOADING HOIST

Glenn G. Dunbar, 2608 Overbrook Dr., Toledo, Ohio

Filed Apr. 17, 1972, Ser. No. 244,414
Int. Cl. B60p 1/54
U.S. Cl. 214—75 H 5 Claims



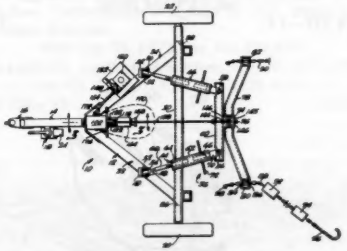
The invention is a vehicle mounted loading hoist for use with a vehicle having a pair of spaced parallel rails positioned on a load carrying bed. A carriage is positioned for movement along the rails and a hoist is mounted on the carriage. The carriage includes a pair of axles mounting wheels which ride on the rails. A motor is positioned at one side of the carriage and drive chains on that side of the carriage are connected from the motor to the axles to selectively drive the loading hoist along the rails. An outrigger assembly is provided on the carriage. The outrigger assembly includes a mechanism for adjusting the positions of a pair of outrigger legs both horizontally and vertically. The outrigger legs may also be moved between storage and operative positions.

3,784,036

TOW TRAILER FOR VEHICLE

H. Eric Gjoerloff, Gern Park, Fla., assignor to Redy-Tow, Inc., Evanston, Ill.

Filed Aug. 17, 1972, Ser. No. 281,329
Int. Cl. B60p 3/12
U.S. Cl. 214—86 A 15 Claims



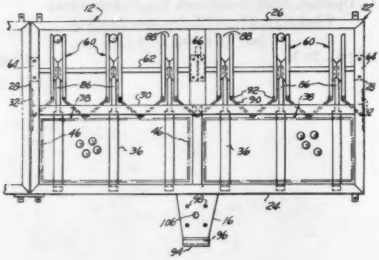
A self contained independent two trailer unit comprised generally of a horizontally disposed V frame, having a forwardly extending tongue, providing a trailer hitch at its forward end, and a transverse axle, extending across the distal ends of the V, carrying a pair of support wheels. A vertical beam is fixed to and extends upwardly from the apex of the V and houses a hydraulic cylinder which is operable by a hydraulic pump means, carried on the frame, to actuate a pair of lift arms to elevate one end of a vehicle by means of chains fixed relative to a clevis bar carried by the lift arms.

3,784,037

GOLF BALL RETRIEVER

Leslie Woodall, 3560 Oulette Ave., Windsor, Ontario, Canada

Filed Oct. 17, 1972, Ser. No. 298,382
Int. Cl. B60p 1/00
U.S. Cl. 214—356 8 Claims



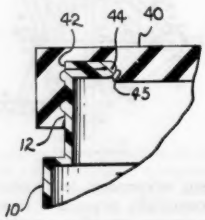
Golf balls lying at random locations on the golf driving range are picked up and deposited automatically in baskets mounted on a trailer forwardly of pick-up wheels, each of which consists of a pair of spaced resilient metallic discs, preferably of steel, with inwardly-converging peripheral portions. The wheels and baskets are mounted in multiple sets upon independent units of the trailer which can be coupled to one another, by pivoted rocking links and connected by converging draw bars to a junction plate drawn by a single tractor. The pickup wheels have pairs of discs with integral frustoconical portions facing toward one another and spot-welded to one another to form a hub for each pickup wheel. These hubs are welded to shafts which are rotatably mounted in bearings on the trailer frame. The balls picked up and gripped between the opposing steel discs are ejected into the baskets by ball-expelling members extending therebetween and mounted on the trailer frame.

3,784,038

PLASTIC BOTTLE MANUFACTURE

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 103,660, Jan. 4, 1971. This application Nov. 7, 1972, Ser. No. 304,316
Int. Cl. B65d 39/08
U.S. Cl. 215—1 C 2 Claims



A blow molding apparatus for forming containers from organic plastic material wherein the container is formed with an expanded radially extending wall at the finish of the container so that the flash and moile material can be removed by a die cut or blanking operation of the apparatus.

3,784,039

NURSING BOTTLE CONSTRUCTION AND ASSEMBLY

Leslie Stephan Marco, Oaklawn, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jan. 10, 1972, Ser. No. 216,402
Int. Cl. A61j 9/00
U.S. Cl. 215—11 E 2 Claims

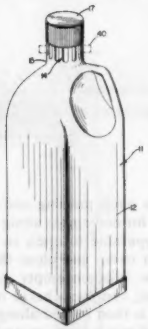
A disposable nursing container made from a preform having an annulus and a plastic material wall integral therewith and extending across the opening therethrough to be subjected to localized heating and forming of the plastic material into a container with a thin flexible wall remaining integral with the annulus and collapsible or foldable within the confines of the annulus to form a saleable article which can later be interiorly attached to a more permanent type of holder with the flexible container wall disposed therein and filled with formula for dispensing through a nipple attached to the annulus.

3,784,040

CONTAINER

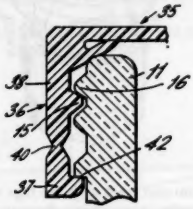
Livingston C. Douglas, Leonia, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Jan. 25, 1972, Ser. No. 220,619
Int. Cl. B65d 1/02
U.S. Cl. 215—31 4 Claims



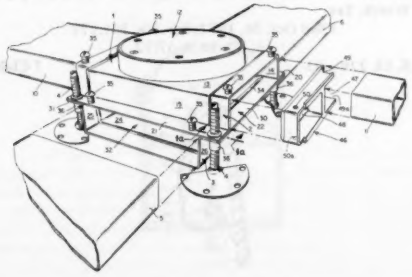
A plastic bottle or like container is provided adjacent an externally threaded discharge nozzle with a longitudinally fluted gripping portion whereby it may be held without substantial deformation during capping in an automatic capping machine.

3,784,041
CLOSURE CAP
Ralph William Birch, 4 Fort Rd., Guildford, England
Filed May 5, 1971, Ser. No. 140,353
Int. Cl. B65d 55/08
U.S. Cl. 215—40 3 Claims



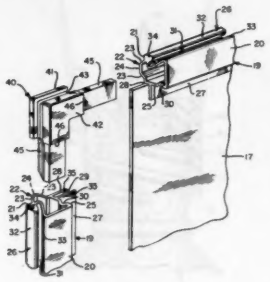
The invention concerns a closure cap adapted to seal the neck of a container, the closure cap being formed of a molding of elastomeric material and having a top portion, an annular skirt which extends from the periphery of the top portion, an abutment portion of said skirt which is adapted firmly to engage said neck to releasably retain the closure cap thereon, and an annular resilient flange portion which extends from and radially inwardly of the skirt and which is spaced from the internal surface of the said top portion by an annular groove whose outside diameter is less than the major internal diame ter of the skirt, the resilient flange portion having a surface which is remote from the top portion and which, even when the resilient flange portion is undeformed, is radially inwardly inclined towards the top portion, the radially innermost part of the last-mentioned surface being convexly curved, the resilient flange portion, when the cap is fitted to the container, effecting a primary sealing engagement with the radially outer edge of the end portion of the neck and a secondary sealing engagement with the top surface of the end portion of the neck, and the resilient flange portion engaging the internal surface of the top portion and trapping a pocket of air therebetween.

3,784,042
UNDERFLOOR BOXES
Robert W. Hadfield, Belpre, Ohio, and William H. Harding, Parkersburg, W. Va., assignors to Textron Inc., Providence, R.I.
Filed May 11, 1971, Ser. No. 142,318
Int. Cl. H02g 3/08
U.S. Cl. 220—3.3 2 Claims



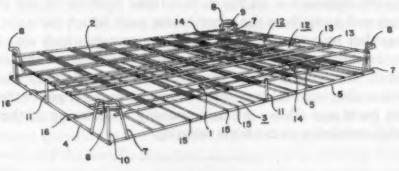
An underfloor box made of identical upper and lower sections which abut each other through flanges. The flanges carry fasteners which lock the flanges together and also serve as nuts for leveling lugs. In one particular form, the box is combined with an adapter which conditions the box to accept either small of large size ducts.

3,784,043
LIGHTWEIGHT COLLAPSIBLE STRUCTURES
Michael C. Presnick, 111 Bloomingdale Rd., New York, N.Y.
Continuation-in-part of Ser. No. 779,750, Nov. 29, 1968, Pat. No. 3,517,849. This application June 26, 1970, Ser. No. 50,065
Int. Cl. B65d 7/30; F16b 5/00
U.S. Cl. 220—4 F 4 Claims



A lightweight, collapsible or knock-down parallelepiped structure and other geometric structures, such as geodesic domes, having a high strength-weight ratio, erected without tools from series of standardized wall sections are disclosed herein. Each wall section of the structure comprises a plurality of framing rails which define a closed frame, which supports a rigid sheet of lightweight, durable paneling. The cross section of the framing rials is hermaphroditic, i.e., it is especially configured to mate with itself. The appropriate mating of two of the framing members is the first step in forming a unique edge joint of the structure without the use of tools. The edge joint is rigidly established by swinging toggle clamp members which firmly lock together the mating framing members of adjacent wall sections. When desired, the new structure may be disassembled or knocked down, also without tools, for storage in minimum space, by releasing the toggle clamp members by a simple pivoting movement. Spring keeper elements hold the toggle clamps in predetermined relation to the wall sections in both the operative and inoperative positions of the toggle clamps.

3,784,044
WIRE BOX OR CRATE
Frans Bruggeman, Zulzeke, Belgium, and Jacobus C. Smit, Venhuizen, Netherlands, assignors to N.V. Bekaert S.A., Zwevegem, Belgium
Filed July 28, 1972, Ser. No. 275,915
Claims priority, application Belgium, July 30, 1971, 770714
Int. Cl. B65d 5/38, 21/00; A47b 5/14
U.S. Cl. 220—19 11 Claims

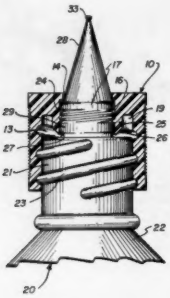


This invention relates to a wire box or a crate made of wires welded to one another in which to place flower pots, whereby the frame of the upper and base surface consists of four wires running perpendicular to one another, the base and upper surface being parallel to one another at a distance practically equal to the height of the flower pots to be placed therein.

3,784,045
PERMANENTLY SEALED CONTAINERS AND END CAPS THEREFOR

Henry Komendowski, Evanston, Ill., assignor to Automatic Liquid Packaging, Inc., Elk Grove Village, Ill.

Filed Oct. 26, 1971, Ser. No. 192,127
Int. Cl. B65d *17/00, 51/20*
U.S. Cl. 220—27 **8 Claims**

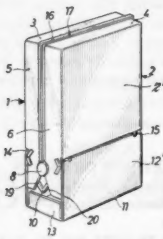


Improved thermoplastic containers which normally are permanently scaled and which have end caps thereon which, upon being threadedly manipulated, are operable to open the containers.

3,784,046
PREFECTED CASE

Nicolas G. Cata, Malgrat De Mar, 30 Mahon St., Barcelona, Spain

Filed Apr. 19, 1972, Ser. No. 245,429
Int. Cl. B65d *43/15, 51/10*
U.S. Cl. 220—35 **9 Claims**



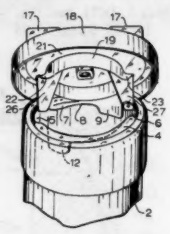
A case or receptacle for cigarettes, change or as a purse itself, for example, and having opposed casing parts freely pivoted at a lower extremity without linking elements, but by eyelets disposed in an aperture formed partially in one casing part and partially in the other casing part, which parts are held together by opposing pairs of pincer springs which also serve to establish stable open and closed positions of the casing parts. The bottom of the case is closed by an element which is removably secured in notches along the outer edges of the casing parts and allows the free opening and closing of the case while retaining its contents securely.

3,784,047
SAFETY CLOSURE CAP

Alfred Cooper, 1381 Via La Paloma, San Lorenzo, Calif.

Filed May 4, 1972, Ser. No. 250,241
Int. Cl. B65d *5/02, 5/42*
U.S. Cl. 220—40 R **8 Claims**

A safety closure cap for bayonet connection with a spout, wherein latching lugs on the cap insertable through bayonet notches in the spout and latching is effected upon turning of the cap, is provided with elongated blocking prongs extending

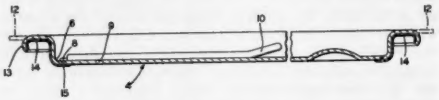


downwardly from and rigid with the lugs which prevent turning of the cap unless the cap is fully seated on the top of the spout.

3,784,048
CONTAINERS FOR CORROSIVE FOOD PRODUCTS

Bernard J. McKernan, Massillon, Ohio, assignor to Van Dorn Company, Cleveland, Ohio

Filed Sept. 9, 1970, Ser. No. 70,843
Int. Cl. B65d *17/20*
U.S. Cl. 220—54 **4 Claims**

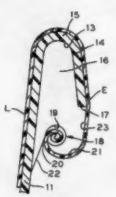


An aluminum food product container or can having an easily opened can end seamed to one end of the can body. The outer surface of the can end member has a score line along which the can end is severed for opening the can. The inner can end surface is coated with an enamel coating to withstand the corrosive attack of food products packed in the can. The undersurface area of the can end member beneath the score line is coated with a sealing compound material to prevent corrosive attack of the aluminum by the food product contents of the can where the enamel may have cracked incident to scoring the can end member.

3,784,049
CONTAINER WITH BAG-LINER LOCKING RIM

Bob R. Hawk, Crowley, Tex., assignor to Loma Corp., Ft. Worth, Tex.

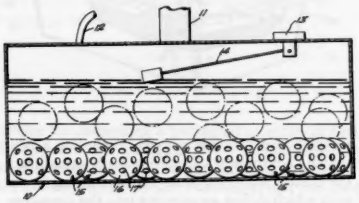
Filed Oct. 26, 1972, Ser. No. 301,177
Int. Cl. B65b *67/12*
U.S. Cl. 220—63 **7 Claims**



A container is provided with a locking rim for securing flexible-bag liner in an open configuration in the container. The upper rim of a container is formed with a plurality of locking ribs angularly spaced around the rim. Each of the ribs is formed with a socket of a configraution that interlocks with

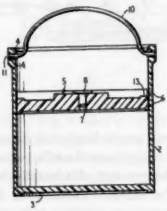
the flexible-bag liner. Rolling of the upper periphery of the bag liner over the rim and into the socket locks the liner to the container.

3,784,050
FLOATING BAFFLE SYSTEM FOR FUEL TANKS
Melvin Pollack, Coral Gables, Fla., assignor to Apeco Corporation, Evanston, Fla.
Filed Oct. 26, 1971, Ser. No. 192,044
Int. Cl. B65d *25/00*
U.S. Cl. 220—85 **3 Claims**



A floating baffle system for dampening the liquid fuel in fuel tanks supplying vehicular engines is described. A plurality of hollow, thin-walled, three-dimensional perforate objects of a tough, semi-rigid, somewhat resilient material are contained within the tank to be churned up and more or less uniformly distributed within the fluid fuel upon agitation of the tank in use, whereupon they act as individual baffle members dampening fluid flow not only by baffle action, but also by absorbing kinetic energy within the fluid by their reactive collision with one another.

3,784,051
CONTAINER
James Anthony Carpenter Shaw, and Eva Shaw, both of Tabacum, Mareeba, Australia
Filed Feb. 9, 1971, Ser. No. 113,919
Claims priority, application Australia, June 8, 1970, 1460/70
Int. Cl. B65d *25/10, 25/32*
U.S. Cl. 220—93 **4 Claims**

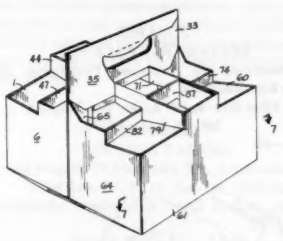


The invention relates to containers for the preservation of materials which evaporate, deteriorate or oxidise when exposed to air. Preservation is achieved by a closure member sealingly movable in the container in contact with the contents and exclude air from the surface of the contents.

3,784,052
STACKABLE CONTAINER
Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Dec. 30, 1971, Ser. No. 214,276
Int. Cl. B65d *21/02, 1/26*
U.S. Cl. 220—97 C **2 Claims**

A relatively thin walled plastic container including bottom stacking means such that a plurality of the subject containers in a stacked or nested condition will provide a column of containers which are not subject to jamming in storage or transport.

3,784,053
ARTICLE CARRIER
James T. Stout, Doraville, Ga., assignor to The Mead Corporation, Dayton, Ohio
Filed Apr. 17, 1972, Ser. No. 244,833
Int. Cl. B65d *73/00*
U.S. Cl. 220—113 **7 Claims**

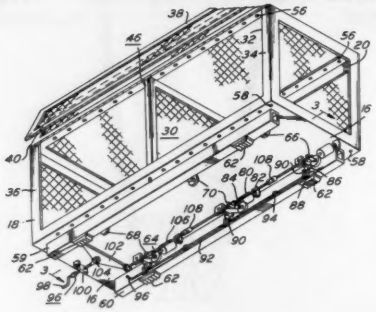


An article carrier of the so-called basket type having bottom, side and end walls secured medially thereof to riser panels which in turn are connected with medial handle structure is provided with two rows of article receiving cells on each side of the handle, the cells being defined by spaced transverse partition strips connected with each side wall and the handle structure together with a longitudinal partition strip struck from each transverse partition strip and foldably joined thereto and to the adjacent end wall together with a longitudinal partition panel secured between each of the transverse partition strips substantially mid-way between each side wall and the handle structure by means of anchoring flaps foldably joined to the longitudinal partition panels and secured in face contacting relation with one of the transverse partition strips. Web structure interconnects the bottom edge of each end wall panel while web structure interconnects the bottom edge of each end wall panel at the other end of the carrier and the lower end of the riser panels at the opposite end of the carrier in order to strengthen the bottom wall thereby to enhance the overall strength and stability of the carrier.

3,784,054
LOADING CONTAINER MEANS

Frances E. Mautz, 7922 Fairfield St., Philadelphia, Pa.

Filed Aug. 27, 1971, Ser. No. 175,439
Int. Cl. B65d *57/00*
U.S. Cl. 220—22.3 3 Claims

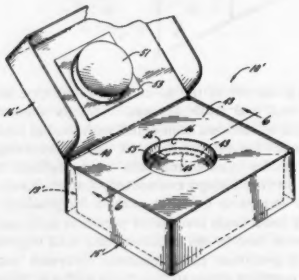


A loading container means comprising a body having horizontal top and bottom walls and vertical side walls providing a storage chamber therein, at least one of said walls providing an opening to said chamber of the body which is closed by a door, at least one of the walls is movable for controllably reducing the size of the chamber of the body to confine the material stored therein, and a plurality of wheel units movable between a retracted position and an extended position for movably supporting the body over a supporting surface when in their extended position. The body is of elongated configuration with first and second ends which are respectively provided with wheel units which are selectively actuatable allowing controlled elevating, lowering and leveling of the body.

3,784,055
RECLOSABLE PACKAGE

John R. Anderson, c/o Anderson Packaging, Inc., 1313 Samuelson Rd., Rockford, Ill.

Filed Dec. 4, 1972, Ser. No. 311,485
Int. Cl. A47k *10/20*
U.S. Cl. 221—46 8 Claims

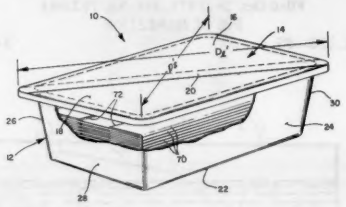


Alcohol-impregnated tissues are stacked face-to-face in a plastic dish-shaped container which is initially sealed air-tight by a peel-away sheet or film to prevent evaporation and leakage of the alcohol. The container is nested within a paperboard carton having a hinged cover whose underside carries a closure plug adapted to telescope into and reclose the container after removal of the sealing sheet.

3,784,056
MOISTURE-IMPERMEABLE PACKAGE

Harry Spruyt, New York, N.Y., and Louis S. Hoffman, Morristown, N.J., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Nov. 6, 1972, Ser. No. 303,703
Int. Cl. B65h *1/00*
U.S. Cl. 221—63 10 Claims

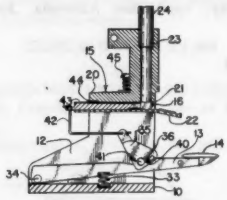


A moisture-impermeable package including a flexible container having a bottom wall and side walls extending upwardly from the bottom wall. The side walls terminate in upper marginal ends which define an opening into the container. A thin, flexible, substantially non-stretchable closure is secured to the container and extends over the opening defined by the marginal ends. The closure has overlapping sections which define a slit that is elongate in a predetermined direction, and the container is in a differentially stressed condition to apply slit-sealing tension forces to the closure in the direction of slit elongation whereby the overlapping sections of the closure defining the slit are maintained in sealing relationship for establishing a substantially moisture-impermeable closure.

3,784,057
PRIMER FEEDER FOR HAND LOADING OPERATIONS

Louis P. Tuttle, 4544 Hillard Ave., La Canada, Calif.

Filed Mar. 27, 1972, Ser. No. 238,029
Int. Cl. B65h *3/24*
U.S. Cl. 221—196 4 Claims



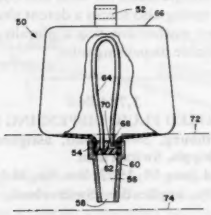
Disclosed is a small parts feeder designed to supply a shell primer between the thumb and forefinger of the operator from a supply upon the depression of a handle by the little finger of the same hand. The feeder includes a motion multiplying mechanism to actuate an ejector ram which advances the lower most of the stack of hat shaped shotgun shell primers or other small parts to a delivery region. The mechanism includes a restricted passage which allows only one primer in the upright position to be delivered at a time. The feeder includes provision for ejection of inverted primers. The driving mechanism for the ram ejector includes spring means which prevents undue load upon the mechanism in the case of jamming.

3,784,058

DISPENSER

Dean H. Buchtel, Canton, Ohio, assignor to NuCon, Inc., Canton, Ohio

Filed Nov. 29, 1971, Ser. No. 202,905
Int. Cl. E03d 9/03
U.S. Cl. 222—57 **4 Claims**



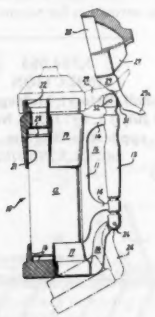
A device for dispensing a measured quantity of first liquid into a body of a second liquid as the second liguid falls and rises. A container for the first liquid has a dispensing nozzle which includes a small orifice. The nozzle is at the lower most point of the container which is otherwise closed. A U-shaped passage extends from the orifice to an opening within the container adjacent the lowest point thereof. The opposite side of the orifice communicates with an open-bottomed chamber. As the second body of liquid rises air entrapped in the open-bottom chamber is forced through the orifice and U-shaped passage and into the container. When the second body of liquid subsequently drops a controlled quantity of the first liquid is drawn out of the container.

3,784,059

BEVERAGE CAN DRINKING HOLDER

John Katzakian, 3411 Arden Creek Rd., Sacramento, Calif.

Filed Feb. 25, 1972, Ser. No. 229,421
Int. Cl. B67b 7/28
U.S. Cl. 222—86 **6 Claims**



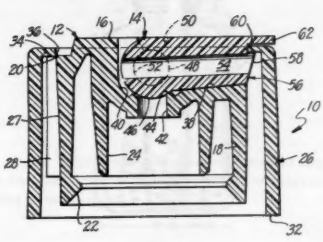
A beverage can drinking holder including an annular sleeve encircling the upper end margin of a beverage can wherein the sleeve has an interior surface gradually tapering radially inwardly progressively upwardly for receiving and seating the upper end edge of the can. The sleeve includes an annular upper end edge forming a drinking lip encircling the sleeve and spaced above the upper edge of the can a distance sufficient to provide an overflow reservoir for receiving an expanding volume of foam and beverage from the can below. In addition, a sharp rigid can-piercing element is carried within the sleeve for driving an opening into the top of the can. A stein or mug-like holder assembly includes a pair of spaced annular members for receiving the opposite ends of the can wherein one of the members is movable between advanced and retracted positions to permit insertion of the can therebetween and subsequent holding of the can by moving the movable member to its advanced position.

3,784,060

CHILD RESISTANT DEFORMABLE CLOSURE

Robert E. Hazard, North Kingstown, R.I., assignor to Polytop Corporation, Slatersville, R.I.

Filed Nov. 17, 1972, Ser. No. 307,357
Int. Cl. B67b 5/00
U.S. Cl. 222—153 **12 Claims**



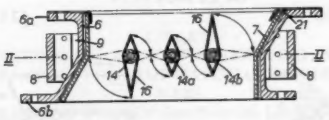
A child-resistant closure can be constructed so as to include a deformable member mounted on a closure body by flexible means which serve to control the deformation of the deformable member when it is manually engaged. During such engagement, deformation of the deformable member is concentrated by the controlled flexure permitted so as to move the deformable member to a position in which a closure member mounted on the closure body can be moved from a closed position to an open position. Preferably, the closure member includes a surface which will engage and move the deformable member as the closure member is moved from an open position to a closed position so that when the closure member is in the closed position a part of the deformable member will overlie a part of said closure member so as to hold the closure member in a closed position.

3,784,061

FEEDER VALVES

John Gabriel Hogan, 19 Meadvale Rd., Addiscombe, England

Filed Jan. 17, 1972, Ser. No. 218,366
Claims priority, application Great Britain, Jan. 25, 1971, 3049/71
Int. Cl. B65g 3/12, 65/70
U.S. Cl. 222—200 **7 Claims**



The invention consists of a feeder valve for periodically discharging material from a storage hopper or other source and consists of a valve housing having a valve aperture passing therethrough and valve opening and closing means consisting of a plurality of vanes or blades extending across said valve aperture and being rotatable about their axes from a horizontal position, in which they close said aperture and a vertical position in which they open said aperture.

3,784,062

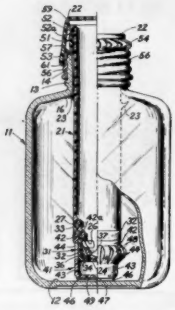
INSERT FOR MEASURING, MIXING AND DISPENSING LIQUIDS

Jonas C. Harschel, 8 Mariposa Ct., Burlingame, Calif.

Continuation-in-part of Ser. No. 845,166, July 28, 1969, Pat. No. 3,596,806. This application Apr. 16, 1971, Ser. No. 134,796

Int. Cl. B67d *5/50*

U.S. Cl. 222—377 **6 Claims**



A device for measuring and dispensing liquids is dimensioned to fit through the neck of a container for a liquid; the device may also be used to mix the measured liquid with a measured diluent, if requested. A tube extends from a normal extended position above the neck to a valve unit near the bottom of the container. The tube is formed with a ball on its lower end and is formed with apertures above the ball. A cylindrical valve seat unit is secured to the bottom of the tube and has a flexibly mounted ring which engages the ball in the extended position of the device to form a liquid seal but flexes away from the ball to permit flow of liquid in a single direction — into the tube — under stress imposed by pushing down on the tube. Below the seat unit is an axially flexible apertured second valve unit which seals off a predetermined quantity of liquid when the tube is pushed down and then compresses axially to force a predetermined quantity of the entrapped liquid past the ring and into the tube: Upon release of the tube, liquid is sucked from the container into the valve slot unit. Water or other diluent may be poured in the open end of the tube to mix with the concentrate. The liquid in the tube is poured from the open upper end.

3,784,063

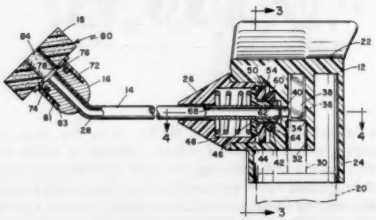
APPARATUS FOR FACILITATING APPLICATION OF FLUIDS

George A. Otis, 715 E. Los Angeles Dr., Vista, Calif., and Kenneth W. Gores, 9831 N.E. 16th St., Bellevue, Wash.

Filed July 7, 1971, Ser. No. 160,400

Int. Cl. B65d *83/14*

U.S. Cl. 222—394 **12 Claims**



An apparatus for facilitating the application of fluids from a source of fluid such as an aerosol container. The apparatus comprises an actuator body which includes a bore for fitting over the dispensing tube of the aerosol bottle. Also mounted on the actuator body is a coupling means which provides for mounting of a dispensing tube in a sealed and rotatable configuration. The dispensing tube has a bend near its free end and may be rotated so as to position the dispensing end against any surface. A seal within the housing comprises a spring loaded seal that compensates for wear and compression of the O-ring seal. The spring also forces a detent sleeve into association with a detent washer creating a plurality of detent positions for the rotatable dispensing tube.

3,784,064

PRESSURIZED FLUID DISPENSING DEVICES

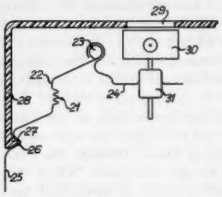
Jean Hardt, Fribourg, Switzerland, assignor to Aluminium Suisse S.A., Chippis, Switzerland

Filed June 19, 1972, Ser. No. 264,156

Claims priority, application Switzerland, June 22, 1971, 9097/71

Int. Cl. B65d *83/14*

U.S. Cl. 222—397 **4 Claims**



An aerosol dispenser comprises a can closed by a cup-like cap member, a valve body supported on the cap member, and a manually operable push button adapted when depressed to dispense the aerosol. Outward movement of the push button is limited by means such as a cover, and one of the can and cap member include a part which when subjected to an internal pressure above a safe value deforms and moves outwards together with the valve body, thereby depressing the push button to dispense the aerosol as for normal operation.

3,784,065

INJECTION

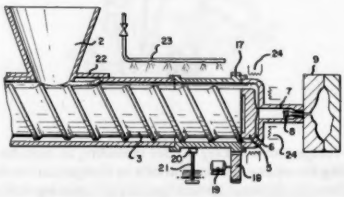
George Arthur Rodolf Patfoort, Maldegem-Kleit, Belgium

Filed July 12, 1971, Ser. No. 161,440

Claims priority, application Belgium, Apr. 15, 1971, 102219

Int. Cl. B29b *3/02*

U.S. Cl. 222—413 **13 Claims**

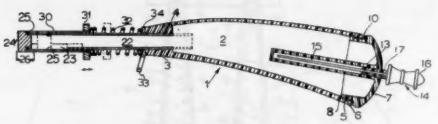


The invention provides a method of injecting by forcing, and apparatus for carrying out that method, which comprises the steps of (i) introducing material to be injected into a cylinder, (ii) compressing the solid material to injection pressure by rotating a screw in said cylinder, (iii) preventing said solid material at least to a large extent from slipping counter to the direction of rotation of the screw to achieve this pressure, (iv) plasticizing the solid material in a small space outside the zone where pressure is generated, and (v) injecting the plasticised material by forcing into a mould by means of the pressure generated in the solid material.

3,784,066
PRIMING HORN

Bobby H. Allen, Louisville, Ky., assignor to DJ Incorporated, Louisville, Ky.

Filed May 31, 1972, Ser. No. 258,349
Int. Cl. B65d *47/28*
U.S. Cl. 222—514 **11 Claims**

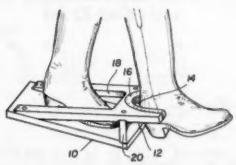


Discloses a priming horn for delivering a premeasured priming charge of powder to the pan of a flint lock rifle. A powder reservoir contains a powder dispensing neck into which a hollow tube is pressure fit so as to communicate with the main body of the reservoir. The tube is closed at it's outer end and contains a charge outlet in its wall and a sliding sleeve is fitted over said priming charge outlet and urged into normally closed position by means of a spring mounted between the body of the powder reservoir and the sleeve proper. The size of the charge may be adjusted manually by pulling the sliding sleeve back a portion of the total distance or it may be premeasured by pushing the hollow tube further back into the body of the powder reservoir. This decreases the total distance that the sleeve may slide and thus effectively decreases the opening of the charge outlet. Further the closure plug at the end of the hollow tube is so spaced from the charge outlet as to leave a proper gap between the flash hole of the pan of the flint lock rifle and the main body of the priming charge.

3,784,067
BOOT JACK

Carroll Hicks, Calico Rock, Ark., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Oct. 18, 1972, Ser. No. 298,499
Int. Cl. A47j *51/02*
U.S. Cl. 223—114 **1 Claim**



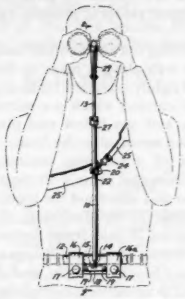
A boot jack comprising a pair of boards secured together at one end, the other end of the second board being raised above the first and having a boot heel receiving recess therein; and means interconnecting said boards.

3,784,068
VIBRATION DAMPENER SUPPORT FOR LENTICULAR DEVICES

Henry L. Pistilli, 3 Bedford Rd., Kendael Park, N.J.

Filed Nov. 16, 1967, Ser. No. 683,556
Int. Cl. A45f *5/00*
U.S. Cl. 224—5 V **6 Claims**

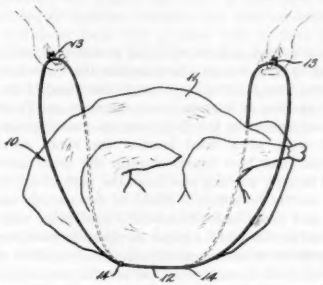
A preferred embodiment of this vibration dampener includes, a stiff upstanding rod of light weight supports a lenticular device such as a movie camera or a field glass or glasses. A ball and socket connection supports this rod from a wearer's belt and a flexible band extends from adjacent a mid-portion of said rod over a shoulder of the wearer, across the back and forward under an arm of the wearer on an opposite side of the wearer from the aforementioned shoulder, and also secured to said rod adjacent a midportion thereof. The over-shoulder portion of said band thus forms a much smaller angle to the rod than does the under-arm portion when said device is at the level of the wearer's eyes.



3,784,069
TURKEY AND ROAST LIFTER SLING

John F. Stoffel, Yonkers, N.Y., assignor to Stoffel Seals Corporation, Tuckahoe, N.N.Y.

Filed Mar. 7, 1972, Ser. No. 232,383
Int. Cl. B65d *63/16*
U.S. Cl. 224—49 **2 Claims**



Apparatus for use in lifting a large fowl or roast from a roaster pan after the comestible has been cooked. The apparatus includes flexible cords joined together at selected areas to provide loops at opposite ends and such loops are disposed about opposite ends of the comestible.

3,784,070
METHOD AND DEVICE FOR BREAKING AWAY PRESTAMPED PIECES OF MATERIAL IN SHEET-LIKE WEBS

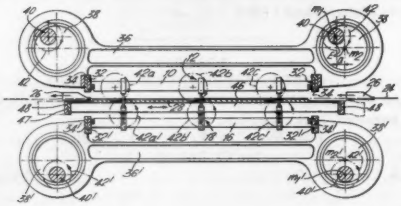
George Manfred Vossen, OP dem Felde 28, Elmpt, Germany

Filed Nov. 24, 1972, Ser. No. 309,460
Claims priority, application Germany, Nov. 27, 1971, P 21 58 907.1
Int. Cl. B26f *3/02*
U.S. Cl. 225—1 **6 Claims**

A method of breaking away pre-stamped pieces of material in sheet-like webs of material comprises moving such a web of material in the direction of its length, progressively bringing a break-away matrix up to the speed of movement of the web to make surface contact with one side of the web on attaining speed synchronism therewith, also progressively bringing up

to the speed of movement of the web pairs of members whereof one of each pair is at each side of the web to grip therebetween on attaining speed synchronism with the web pieces of material to be broken away from the web, and breaking away the so-gripped pieces of material against the support of the matrix.

A device for carrying out the method comprises means for progressing such a web along a plane in the direction of its length, networks of rigidly-mounted break-away pins mounted in first and second carriers which are mirror images of one another one above and one below said plane, the first and second carriers being mounted in the frame of the machine at a break-away zone of a stamping machine for movement towards and away from said plane with the axes of the break-away pins normal to said plane and the lower break-away pins resiliently displaceable in the directions of their lengths, a third carrier supported in said frame below said plane and mounting a matrix having through-openings each co-axial with an upper and a lower break-away pin, and means for guiding the first, second and third carriers each along a path of movement in relation to the movement of the web with appropriate correlation of the break-away pins and the through-openings



in the break-away matrix with the pieces of material to be broken away such that in a first section the three carriers are accelerated from starting positions to the speed of the web, in a second section at least between the start and finish of the break-away operation the three carriers move synchronously with the web, in a third section the three carriers are decelerated, and in a fourth section the three carriers are returned to their starting positions, the path of movement of the first carrier including a phase of downwards movement towards said plane and substantially coincident with its first and second sections and a phase of upwards movement away from said plane and substantially coincident with its third section, the path of movement of the second carrier including a phase of upwards movement towards said plane and substantially coincident with its first section, and a phase of downwards movement away from said plane and substantially coincident with its second and third sections, and the path of movement of the third carrier including a phase of upwards movement towards said plane until the matrix is applied against the web, said phase being substantially coincident with its first section, and a phase of downwards movement away from the web and falling into the end of its fourth section.

3,784,071

VARIABLE LENGTH FESTOONING OF WEB MATERIAL

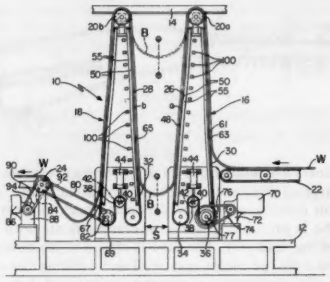
Ernest A. Milan, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 2, 1973, Ser. No. 347,295

Int. Cl. B65h *17/34*

U.S. Cl. 226—1 **15 Claims**

Variable length storage of running length material between stations in a web handling or processing line in which storage of the self-supporting portion of the variable length is nearly constant in length independent of the total length of the stored loop. The sides of the stored variable length loop are held against the respective surfaces of a pair of opposed and nearly vertical endless belts each of which belt is drivable in a direction generally opposite to that of the other belt. Each belt is driven independently of the other belt by drive means at least one of which is controlled in response to a pair of sensors respectively detecting the predetermined maximum and minimum extents of the length of the stored loop. In the particular and proximate utility of the invention, the web being handled comprises bias-cut wire fabric breaker belt stock for use in pneumatic tires. The respective sides of the variable length loop are held against the associated surfaces of the belts to insure movement of the web together therewith by a plurality of magnets arranged to act through the belt.



3,784,072

STRIP SHAPE CORRECTION IN GALVANISING LINE

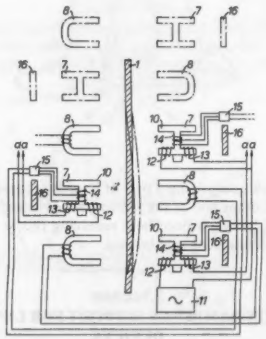
David Alun Armstrong, and Kenneth Gill Lewis, both of Glamorgan, Wales, assignors to British Steel Corporation, London, England

Filed Apr. 15, 1971, Ser. No. 134,266

Claims priority, application Great Britain, Apr. 15, 1970, 17,964/70

Int. Cl. B65h *23/00*

U.S. Cl. 226—1 **13 Claims**



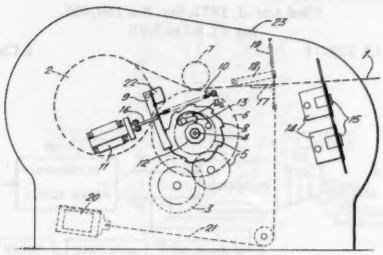
A method of correcting planar disconformities in moving metal (e.g., ferromagnetic) sheet, in which a said disconformity from a predetermined plane is detected, (e.g., by a magnetic field detector), and in which the sheet is flexed (e.g., by electromagnets) in dependence on the degree of disconformity from the plane, the flexing being of such sense and magnitude as to urge the sheet to conform to the plane.

3,784,073

TAPE DISPENSING APPARATUS

Francis Edward Faggetter, Dartford, England, assignor to Better Packages (U.K.) Limited, London, England

Filed Dec. 13, 1971, Ser. No. 207,446
Int. Cl. B65h 17/22, 25/16
U.S. Cl. 226—47 2 Claims



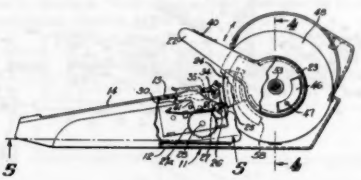
In a tape dispensing apparatus by which predetermined lengths of tape material are dispensed from a reel by co-operating rotatable feed and pressure rollers the feed roller is rotatable by a motor through a spindle driven by the motor. An electric signal producing means is operated by the spindle following a predetermined angle of rotation of the spindle and then sends an electric signal to a selection device which in response to the signal applies the brake to stop rotation of the spindle thus determining the length of tape drawn from the reel by the feed and pressure rollers.

3,784,074

ROLL MEMORANDUM DEVICE

Chuzo Mori, 7-9 3-chome, Tateishi, Katsushika-ku, Tokyo, Japan

Filed Oct. 27, 1972, Ser. No. 301,550
Claims priority, application Japan, Nov. 27, 1971, 46/22491
Int. Cl. B65h 17/22
U.S. Cl. 226—127 17 Claims



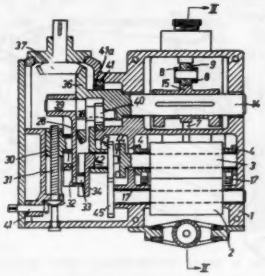
A roll memorandum device is shown which is formed with a body having a forwardly disposed table portion thereupon provided with a writing surface. A transversely disposed first shaft is connected to the body and is forwardly spaced and horizontally aligned with the paper roll support. Feed rollers are disposed upon the first feed shaft. A horizontally disposed pivotally movable holding member lies above the writing surface and overlies the feed rollers. A spring is connected to the holding member biasing the same toward the feed rollers. Means are provided to rotate the paper roll support and feed rollers simultaneously. Guide means are also provided within the body to guide selected portions of the paper roll.

3,784,075

APPARATUS FOR THE STEPWISE FEED OF WORKPIECES

August Thomas Portmann, Arbon, Switzerland, assignor to Bruderer AG, Arbon, Switzerland

Filed Sept. 26, 1972, Ser. No. 292,385
Claims priority, application Switzerland, Oct. 1, 1971, 14369/71
Int. Cl. B65h 17/26
U.S. Cl. 226—143 9 Claims



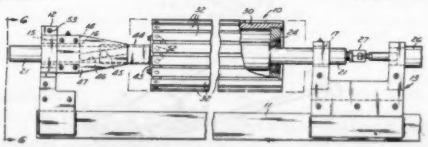
Apparatus for the stepwise feed of a workpiece comprising two contrarotating oscillating driven feed rollers which serve to receive the workpiece therebetween and which are respectively alternately movable at the point of time of reversal of their direction of rotation towards one another into a feed position and away from one another into an idle position. There is also provided a holding mechanism for the workpieces which can be synchronously switched-in or activated with the movement of the feed rollers from their feed position into the idling position and can be switched-out or inactivated when the rollers move from their idling position into the feed position.

3,784,076

WEB GUIDING APPARATUS

R. Stanton Avery, Pasadena, Calif.; Robert T. Scharenberg, Mentor, and Gordon G. Zeidman, Columbus, both of Ohio, assignors to Avery Products Corporation, San Marino, Calif.

Filed Feb. 2, 1973, Ser. No. 329,223
Int. Cl. B65h 17/22
U.S. Cl. 226—179 7 Claims



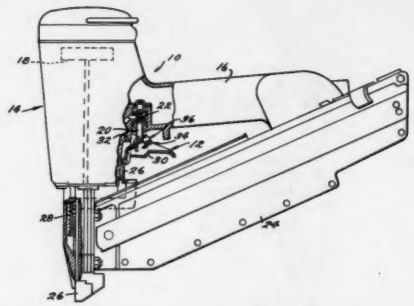
A web guide roll is bodily translated in a direction parallel to its axis to one or the other side of an intermediate bodily position and in opposition to lateral shifting of the web. At the same time, the steering action of the roll on the web is varied as a function of the translation of the web to one side or the other of such intermediate bodily position while maintaining the roll axis normal to the desired direction of web travel.

3,784,077

PORTABLE PNEUMATIC FASTENER DRIVING DEVICE WITH IMPROVED ACTUATING MECHANISM

George E. Burke, Jr., East Greenwich; Walter G. Lemos, and Dennis M. Shippee, both of Coventry, all of R.I., assignors to Textron Inc., Providence, R.I.

Filed May 5, 1972, Ser. No. 250,672
Int. Cl. B25c *1/04*
U.S. Cl. 227—8 **19 Claims**



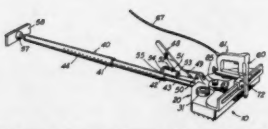
A portable fastener driving device of the conventional pneumatic type having an improved actuating mechanism including an acutating member mounted for movement from a normal inoperative position into an operative position for initiating the movement of the fastener driving means through a fastener driving stroke, a contact trip mounted for movement from a normal inoperative position into an operative position in response to the movement of said device into cooperating engagement with a workpiece, a trigger mounted for manual movement from a normal inoperative position into an operative position and an enabling structure operatively associated with the actuating member, the trigger and the contact trip for (1) enabling movement of the trigger into its operative position when the contact trip is in its inoperative position without movement of the actuating member into its operative position, (2) enabling movement of the trigger into its operative position when the contact trip is in its operative position to effect movement of the actuating member into its operative position, and (3) enabling movement of the contact trip into its operative position when the trigger is in its operative position without movement of the actuating member into its operative position.

3,784,078

CARPET STRETCHER AND KICKER

James L. Escoe, Rt. No. 2, Loganville, Ga.

Filed Mar. 21, 1972, Ser. No. 236,672
Int. Cl. B25c *1/00*
U.S. Cl. 227—13 **7 Claims**



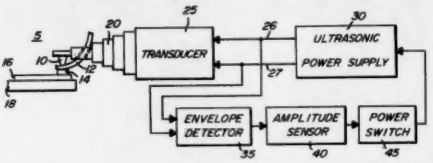
Apparatus for use in stretching and securing carpet in place on a supporting surface, including a carpet gripping head having a plurality of carpet engaging prongs and including an elongated handle means capable of being utilized to provide tension on carpet engaged by the carpet gripping head. A staple gun is carried by the carpet gripping head and is operable for ejecting staples into the carpet whereby the staples can be used for securing the edges of carpet in position on a supporting surface. An alternate embodiment of the carpet stretching and securing apparatus provides a staple gun which includes a plurality of staple magazines and a plurality of simultaneously operable plunger elements capable of ejecting a plurality of staples into a carpet and a carpet supporting means.

3,784,079

ULTRASONIC BOND CONTROL APPARATUS

Keith G. Spanjer, Scottsdale, Ariz., assignor to Motorola Inc., Franklin Park, Ill.

Filed Apr. 3, 1972, Ser. No. 240,404
Int. Cl. B23k *5/20*
U.S. Cl. 228—1 **6 Claims**



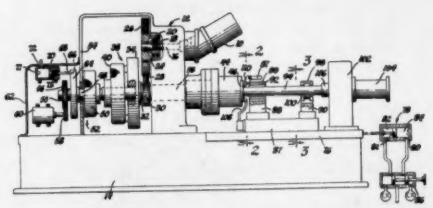
A method and apparatus for improving the quality of the bond obtained from an ultrasonic welding apparatus. The formation of the bond is detected by monitoring the voltage applied to the ultrasonic transducer and by detecting a drop in the applied voltage indicative of bond formation. The bonding apparatus is turned off immediately following bond formation to prevent further ultrasonic energy from weakening the bond.

3,784,080

APPARATUS FOR FRICTION WELDING

Edwin D. Ditto, 1332 Lake Crescent Dr., Bloomfield Hills, Mich.

Division of Ser. No. 184,660, Sept. 29, 1971. This application Nov. 6, 1972, Ser. No. 304,228
Int. Cl. B23k *27/00*
U.S. Cl. 228—2 **1 Claim**



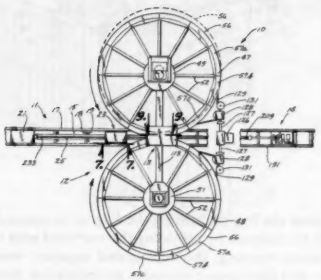
A flywheel driven through a one-way clutch by a motor can be selectively clutched to a drive spindle and connected chuck to relatively rotate workpieces which are moved into engagement under load. After expenditure of a portion of its stored energy, the rotating flywheel is released so that it can be readily accelerated by the motor under low load to a predetermined speed and energy level for another friction welding operation. The remaining stored energy in the rotating spindle and parts connected thereto is employed to complete the friction weld after flywheel release. A positioning device to facilitate loading of the workpieces into the chuck from a loader, an auxiliary brake to shorten friction weld times after flywheel release, and means for removing weld flash are disclosed.

3,784,081

APPARATUS FOR AND WELDING OF TAPERED PIPE

Thomas R. Karmann, Omaha, and Alton A. Adams, Arlington, both of Nebr., assignors to Valmont Industries, Inc., Valley, Nebr.

Filed Mar. 20, 1972, Ser. No. 236,007
Int. Cl. B23k 1/20
U.S. Cl. 228—17 5 Claims



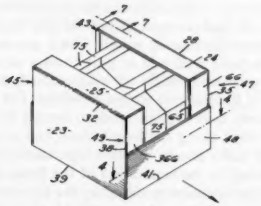
An apparatus capable of receiving a tapered tube having a straight, open seam, forcing and guiding the tube in a seam aligned condition into a welding station where the tube is then drawn through the welding station by the application of frictional pressure upon opposite external sides thereof, the guiding and alignment of the tube as it is being welded aided by a torque unit applied to the emerging end thereof, the torque unit capable of rotating the tube about its longitudinal axis as it is being longitudinally moved and welded; and with a hydraulic system capable of applying appropriate pressure to the sides of the tube-ever increasing in diameter, to aid in maintaining the open seam at a proper dimension for thermal-electric welding, and capable further of automatically decreasing the pressure at a predetermined distance from the butt end of the tube for the same reason, the apparatus capable of automatically completing the weld, ejecting the welded tube, and resetting itself for receiving and processing another tube for welding thereof.

3,784,082

NON-RETURNABLE CONTAINER CASE

Arthur C. Hurlock, Walled Lake, Mich., assignor to Ex-Cell-O Corporation, Detroit, Mich.

Filed Oct. 29, 1971, Ser. No. 193,809
Int. Cl. B65d 5/20
U.S. Cl. 229—30 2 Claims



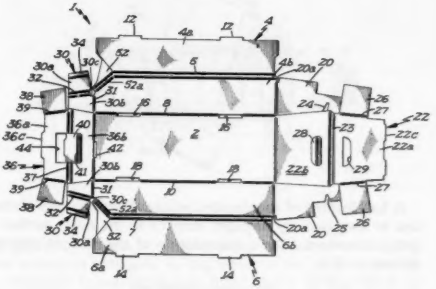
A single piece corrugated case blank which can be formed into a four support post one way case having reinforced three column structure per post provided with a support shelf supported by the support post members.

3,784,083

TOTE TRAY

James L. Pfaffendorf, Maple Grove, and Marlyn D. Johnson, Minneapolis, both of Minn., assignors to Liberty Carton Co., Minneapolis, Minn.

Filed Oct. 18, 1971, Ser. No. 189,950
Int. Cl. B65d 5/22
U.S. Cl. 229—34 R 11 Claims



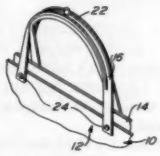
A collapsible tray constructed from a single blank of fiberboard material folded and formed to provide an open top tray having a relatively short, front end wall providing a front access opening, and reinforced by a rigid rim extending around the entire, inner periphery of the tray with the side legs of the rim extending along the side walls of the tray in a downwardly and forwardly inclined position. The front end of the inclined rim extends across the top of the short, front end wall of the tray, and the rear end of the rim is supported at a higher elevation coinciding with the top of the rear end wall of the tray; and the side legs of the rim taper inwardly towards each other towards the front of the tray to provide for the snug positioning of the rim along the entire length of the inclined side walls of the tray.

3,784,084

BAG WITH BAIL HANDLE

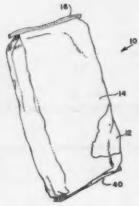
Curt Charles Pearl, Pikesville, Md., assignor to APL Corporation, Great Neck, N.Y.

Filed Aug. 31, 1971, Ser. No. 176,496
Int. Cl. B65d 33/06
U.S. Cl. 229—54 R 1 Claim



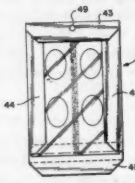
A bag having a pair of bail handles is provided for use in bag vending machines. The bail handles are each connected to a different panel of the bag with the bag being folded into a planar configuration. The panels which have bail handles connected thereto are disposed in opposed relation with one of the handles having a projection which extends from the handle in the plane of the bag and the other of the handles having an opening therein for receiving the projection so that the handles are secured together by insertion of the projection in the opening to prevent the handles from being separated in a bag vending machine.

3,784,085
MULTIWALL BAG CONSTRUCTION
William E. Kilgore, Palatka, Fla., assignor to Hudson Pulp & Paper Corporation, Palatka, Fla.
Filed Mar. 17, 1971, Ser. No. 125,310
Int. Cl. B65d *33/02*
U.S. Cl. 229—55 **15 Claims**



A bag formed of spunbonded material has an outer surface and at least one ply of paper secured to the outer surface in order to reduce actinic degradation of the olefinic polymer material.

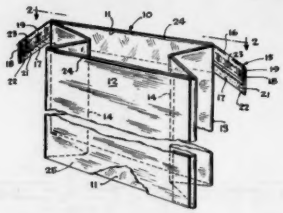
3,784,086
DISPLAY PACKAGE
Hampton E. Forbes, Jr., Wilmington, Del., assignor to Westvaco Corporation, New York, N.Y.
Filed Dec. 30, 1971, Ser. No. 213,880
Int. Cl. B65d *33/02, 33/04*
U.S. Cl. 229—55 **2 Claims**



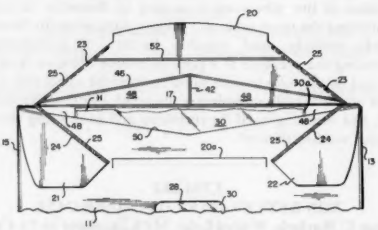
A package is disclosed for packaging articles having little or no depth and constructed from a pre-scored blank of material, such as paperboard, to which there is secured a tubular segment of transparent flexible material. The ends of the tubular segment are either heat sealed after the package is loaded with its contents, or the ends of the tube are closed by end flaps attached to the pre-scored blank.

3,784,087
TAMPERPROOF, RECLOSEABLE PACKAGE AND CLOSURE THEREFOR
Henry H. Styers, Chicago, Ill., assignor to Kloz-Seal Products Co., Inc., Chicago, Ill.
Filed Jan. 17, 1972, Ser. No. 218,407
Int. Cl. B65d *33/30*
U.S. Cl. 229—62 **5 Claims**

A container having a tamperproof, reclosable closure, the container being of the bag or carton type and having an opening formed by opposite front and rear walls, the closure comprising a flat strip, a portion of which is folded upon itself to form an envelope for a deformable wire. The closure is formed from a paper strip heat-sealable on one side only so that when the heat-sealable side is folded in face-to-face relationship over a portion of the width of the strip to form an envelope for the deformable wire sealed therein, there results a segment along the length of the strip which is heat-sealable and an adjacent segment, containing the wire, which is not heat-sealable. The closure is attached to the flattened opening of a bag by heat-sealing it to one side and folding the ends thereof to the other side of the bag and sealing thereto. Accordingly, when attached and sealed to a bag, the envelope portion of the closure, containing the deformable wire, will not seal thereto so that the end tab portions of the enclosed wire can be unfolded from the bag permitting the bag to be opened. The bag can then be reclosed by refolding the enclosed wire tabs. Prior to the initial opening, the heat-sealed segment must be ruptured so that the closure provides an indication that the container has been opened.



3,784,088
CONVERTIBLE HOSIERY PACKAGE
John V. Shea, and Raymond A. Cote, both of Charlotte, N.C., assignors to Rexham Corporation, New York, N.Y.
Filed Apr. 27, 1972, Ser. No. 248,105
Int. Cl. B65d *27/00*
U.S. Cl. 229—68 **12 Claims**



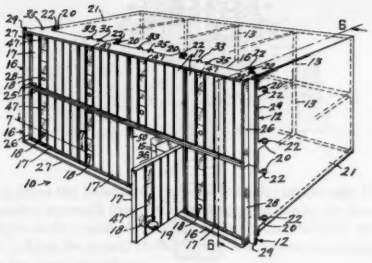
Disclosed herein is a new and improved reclosable convertible envelope for packaging hosiery or soft goods, having unique end constructions which accommodate the conversion of a normally flat, two-walled hosiery envelope into a bulging four-walled envelope, i.e., an envelope having front and rear walls and two end walls disposed there-between. Specifically, the unique end wall construction of the new envelope includes generally diamond-shaped panels which are derived in part from an envelope wall and in part from a closing flap. The diamond-shaped end panels are longitudinally bisected by the end scores of the flat two-walled envelope. For use with non-bulky contents, the envelope tends to remain flattened with its end flaps folded along the longitudinal end scores, however, for use with bulky goods, the envelope takes on "dimension" or is expanded by the separation of the front and rear walls. The expansion is accommodated by the formation of vaulted, generally diamond-shaped end walls by the infolding or collapsing of the end flap and wall portions along the opposite sides of the diamond-shaped panels. The new envelope may be lined, with a flexible liner or pre-formed plastic sleeve. It is provided with convenient tear opening and tab reclosing arrangements designed in such a manner as to eliminate rough edges that might snag or otherwise harm the hosiery.

3,784,089

POSTAL BOX

Byron W. Koch, Toledo, Ohio, assignor to N L Industries, Inc., New York, N.Y.

Filed Sept. 5, 1972, Ser. No. 286,334
Int. Cl. B65d *91/00*
U.S. Cl. 232—24 4 Claims



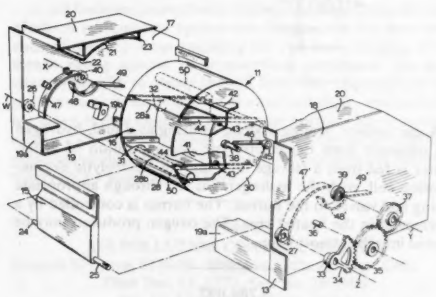
An improved postal box comprising a molded container having a plurality of letter compartments arranged into an even number of rows and two door assemblies for closing the compartments. Each door assembly has an identical die cast frame which extends around half of the rows of compartments. Integral members divide the frame into sections which are aligned with compartment openings. A door is selectively mounted within each section to pivot from adjacent either of two opposed section sides. Lock plates are formed on each of the opposed section sides for engaging a lock on a door when the door mounted adjacent the opposite section side is closed and locked.

3,784,090

SAFE DEPOSIT APPARATUS

Michael H. Markham, Rexdale, Ontario, Canada, assignor to Chubb Industries Limited, Brampton, Ontario, Canada

Filed July 28, 1972, Ser. No. 276,148
Int. Cl. B65g *11/04*
U.S. Cl. 232—44 9 Claims



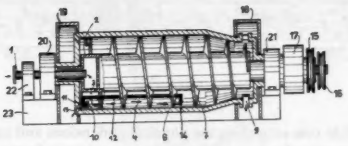
A safe deposit apparatus includes a rotary drum providing a receptacle into which the deposit is placed. The receptacle includes a reciprocatory ejector plate for ejecting the deposit when the drum is rotated into a discharging position. The ejector plate is actuated by a cam mechanism in accordance with the rotation of the drum, the ejector plate being retained by the mechanism in a position flush with the surface of the drum until the drum is returned to a receiving position.

3,784,091

CENTRIFUGAL SEPARATOR

Georg Hiller, Bergstrasse 8, Vilsbiburg, Germany

Filed Nov. 2, 1972, Ser. No. 303,058
Claims priority, application Germany, Nov. 3, 1971, 2154558
Int. Cl. B04b *1/20, 13/00*
U.S. Cl. 233—7 19 Claims



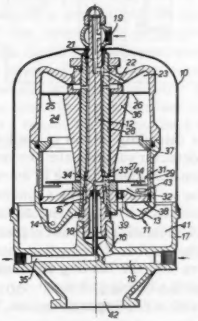
A centrifugal separator comprising a rotary bowl and a screw conveyor rotatable in said bowl on the uniflow principle, wherein liquid separated from slurry in the bowl is withdrawn under suction through a conduit disposed beyond the level of the liquid in the bowl.

3,784,092

CENTRIFUGAL SEPARATOR

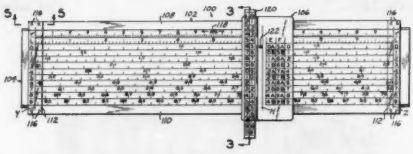
Roland Richard Gibson, London, England, assignor to The Glacier Metal Company Limited, Alperton, Wembley, Middlesex, England

Filed Apr. 26, 1972, Ser. No. 247,796
Claims priority, application Great Britain, Apr. 27, 1971, 11,569/71; Sept. 2, 1971, 40,904/71
Int. Cl. B04b *11/06*
U.S. Cl. 233—20 R 5 Claims



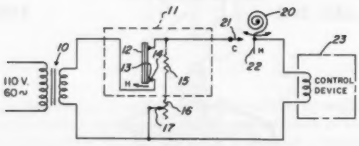
A centrifugal separator for separating say, oil from water, for example, in a cooling water system for a machine, has a separating chamber divided into two regions by a transverse plate which serves to collect the lighter fluid on one side and to allow the heavier fluid to flow to the other side around its edge. There may be a separate fluid for spinning the chamber and one of the fluids may also leave the chamber tangentially to help spin it. There may be a conical surface enabling the lighter fluid to run downwardly and inwardly to its outlet to assist separation.

3,784,093
FACTORMATIC SLIDE RULE
Kent H. Bennett, 2724 J-3 Waiaka Rd., Honolulu, Hawaii
Filed Oct. 2, 1972, Ser. No. 297,147
Int. Cl. G06g *1/02*
U.S. Cl. 235—70 R **4 Claims**



A slide rule extending the physical dimensions and calculating capacity of a logarithmic scale comprising a frame having start-answer index lines at its respective ends slidably supporting a slider having one or more scales adjacent one longitudinal side. The slider is longitudinally scored across its remaining transverse width to define a plurality of longitudinal parallel lines extending between transverse end limits respectively coinciding with the indexes. A logarithmic scale, equal in length with the combined length of the plurality of parallel lines, is equally divided to form a like plurality of logarithmic scale segments, which are progressively scored on the plurality of parallel lines. A cursor, supported by the frame, includes a scale line number calculator for determining the magnitude and location of a calculated result.

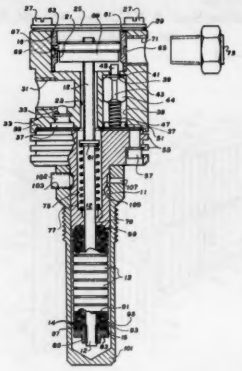
3,784,094
MODULATING HEAT CONTROL
Ralph C. Goodwin, 1430 Ranier Ln. Rt. 2, Wayzata, Minn.
Filed Sept. 18, 1972, Ser. No. 290,246
Int. Cl. G05d *23/30*
U.S. Cl. 236—68 C **9 Claims**



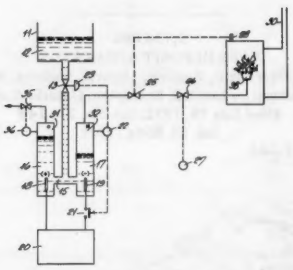
A heat loss time throttling circuit is disclosed in which an outdoor heat loss detector subordinates the indoor thermostat by using a condition sensitive housing to encapsulate the outdoor heat loss detector and a heating element which actuates the outdoor loss detector in short time durations through an electrical source. The heating element is placed in series with the source and the indoor thermostat may be connected between the source and the heating element or between the control device and the heating element. An alternate form is disclosed for use with a cooling mechanism, both forms being relatively inexpensive in their construction.

3,784,095
TEMPERATURE RESPONSIVE DEVICE
Robert A. Bilbrey, Orinda, Calif., assignor to Benjamin W. West d/b/a California Controls Company, Berkeley, Calif.
Filed Feb. 14, 1972, Ser. No. 226,043
Int. Cl. G05d *23/02*
U.S. Cl. 236—101 **12 Claims**

A temperature responsive device is described for use in operating a control element which, for example, controls the opening and closing of a valve or an electrical switch. The control element is moved by a trip rod which, in turn, is moved in response to the expansion and contraction of a plurality of aligned thermal expansion cells. Each of the expansion cells comprises an expander of a material having a high thermal expansion coefficient, and means restraining the expander against deformation other than in the direction in which the cells are aligned.



3,784,096
HYDROGEN HEATING SYSTEM
Fritz Zweifel, Linthal, Switzerland, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed July 12, 1972, Ser. No. 271,178
Int. Cl. C01b *13/04;* **F24d** *12/00*
U.S. Cl. 237—1 R **1 Claim**

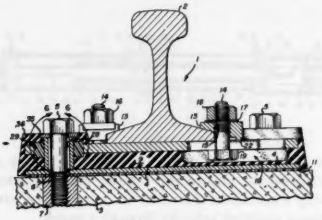


A gas furnace heating system, utilizing as a fuel, hydrogen gas obtained from the electrolytic decomposition of water. Water is fed from a storage tank into an electrolytic decomposition cell, with the hydrogen gas fed through appropriate piping and valves to the burner. The burner is controlled by a thermostat in the heated area. The oxygen produced may be vented into the atmosphere.

3,784,097
DIRECT FIXATION RAIL FASTENER
Robert L. Landis, Los Altos, Calif., assignor to The Landis Sales Company, Los Altos, Calif.
Filed Oct. 13, 1972, Ser. No. 297,318
Int. Cl. B01b *9/62*
U.S. Cl. 238—310 **9 Claims**

The track of a rapid transit rail system is fastened to a supporting structure via the intermediary of a plurality of rail fasteners. Each rail fastener includes a track plate supported from a base plate via the intermediary of an elastomer layer

bonded between the plates. A pattern of voids is provided in the elastomer to enhance the vibration damping effect of the elastomer layer. Increased lateral restraint for the track plate and rail is provided by means of a pair of tubular members upstanding from the base plate on opposite sides of the rail. High compressive strength inserts are provided between the lateral side edges of the track plate and the upstanding tubular members for taking the lateral forces on the track plate in compression on the insert members.



3,784,098

RAIL FASTENING

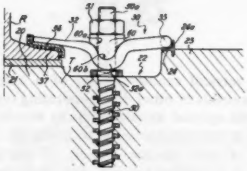
Marian Serafin, Paris, and Maurice Decubber, Beaumont S. Oise, both of France, assignors to Societe Anonyme de Traverses en Beton Arme Systeme Vagneux, Paris, France

Filed July 3, 1972, Ser. No. 268,801

Claims priority, application France, July 30, 1971, 7128079; Dec. 17, 1971, 7145480

Int. Cl. E01b *9/30*

U.S. Cl. 238—349 **4 Claims**



A rail fastening comprises a resilient U-shaped clip the base of which is supported against the sleeper with the free outer ends of the clip arms engaging the rail foot. Holding down means acting against an intermediate portion of the arms stresses the clip to clamp the rail foot. The intermediate arm portions are circularly curved in a vertical plane, and the holding down means engaging the curved portions has a complementary shape. This enables greater deflection of the clip for a given clamping pressure. The outer end portions are flattened where they engage the rail foot.

3,784,099

AIR POLLUTION CONTROL METHOD

Francis N. Bosco, 6119 W. 38th Ave., Wheat Ridge, Colo.

Filed Dec. 13, 1971, Ser. No. 207,595

Int. Cl. E01b *1/00, 21/00, 25/28*

U.S. Cl. 239—2 R **12 Claims**

A mixture of seeding, pollutant inhibiting, and co-alescing chemicals are vaporized and dispersed in a jetting action into the atmosphere to provide an aggregate of nuclei on the order of subcolloidal approximately submicromolecular sizes upon which nucleations of water vapor in the atmosphere take place free from adjacent nucleations to form water droplets and ice crystals with accompanying releases of latent heat, the water droplets, ice crystals further serving as nuclei in a breeding action for a chain reaction of latent heat releases with the vaporized coalescing chemicals aiding in the coalescence of water droplets and the released latent heat diffuses upwardly in an outward expansion to produce an updraft whereby to puncture atmospheric inversions and inhibit the formation of secondary pollutants.

3,784,100

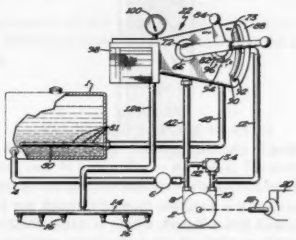
FLOW CONTROL DEVICE FOR LIQUID APPLICATORS AND PROCESS OF OPERATING SAME

John D. Kirschmann, 323 Airport Rd., Bismarck, N. Dak.

Filed Mar. 30, 1972, Ser. No. 239,684

Int. Cl. B05b *9/06, 15/04*

U.S. Cl. 239—11 **7 Claims**



The distribution of a pressurized treating liquid, such as liquid fertilizer, from spray nozzles on an agricultural vehicle is metered and controlled to maintain a desired application rate onto the ground in gallons per minute at varying ground speeds of the vehicle by means of a control valve assembly including an applicaion selector valve located directly in the main flow line to the spray nozzles and serving to divide liquid flow between the spray nozzles and a bypass line leading to the inlet of a circulation pump. The selector valve is initially adjusted to establish a predetermined supply pressure to the spray nozzles which will provide the desired liquid application rate for a particular vehicle ground speed, crop row spacing and orifice size of the selector valve. On applications where the aforesaid circulation pump is driven by a power take-off from a vehicle engine, a second, ground speed control valve forming part of the control valve assembly and located directly in the main liquid flow line upstream of the aforesaid selector valve is adjusted to a setting corresponding to the predetermined vehicle ground speed and divides the liquid flow between the main flow passage leading to the selector control valve and a return line leading back to a liquid supply tank, or to the pump inlet.

3,784,101

LIQUID DISCHARGE NOZZLE HAVING CYLINDRICAL INTERNAL LIQUID FLOW DIRECTOR MEANS

Wayne W. Frempter, Burbank, Calif., assignor to Rain Jet Corp., Burbank, Calif.

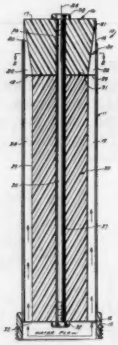
Filed July 24, 1972, Ser. No. 274,186

Int. Cl. B05b *17/08*

U.S. Cl. 239—17 **2 Claims**

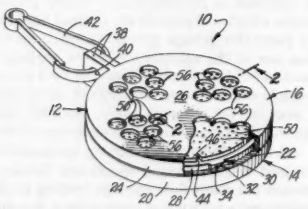
A liquid discharge nozzle for discharging liquid generally upwardly therefrom has an elongate straight body which defines a duct which extends between liquid inlet and outlet openings at the lower and upper ends of the body. A plug having substantial length between its opposite ends is disposed across the duct adjacent the duct outlet opening. A plurality of liquid flow passages are defined through the plug at regular intervals around the plug at locations proximate to the periphery of the plug. An elongate cylindrical liquid flow director member extends from the plug lower end along the duct toward the lower open end of the body. The director member and the body cooperate to define an elongate annular liquid flow path between the passages and the liquid inlet opening.

The annular flow path gas a width transversely has the body which is sufficiently great to prevent the upper end of the director member from restricting to any significant degree the



liquid flow area of the passages formed through the plug. The director member has a length which is substantially greater than any dimension of the director member transversely of the duct.

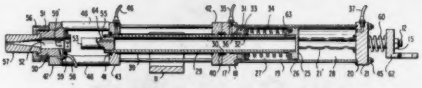
3,784,102
PENDANT CAPABLE OF EXPOSING DIFFERENT AREAS OF A VOLATILE TABLET
Allan C. Stults, 301 Edgewater, Balboa, Calif.
Filed Jan. 12, 1973, Ser. No. 322,931
Int. Cl. A61l 9/04
U.S. Cl. 239—36 **14 Claims**



A device for exposing different areas of a body of a volatile material can be constructed using a multi-part housing to contain the body. At least one of the parts of the housing has at least one perforate area and at least one imperforate area. The housing and the body are shaped so that the body may be assembled in the housing against movement in different positions in which different portions of the body are covered by the perforate area or areas of the housing. Preferably the device is formed as a pendant so as to include means for securing the housing to a support member such as the collar fitting around the neck of an animal. Preferably the body used is in a disc-like tablet form and includes a volatile flea and tick insecticide.

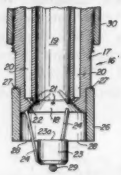
3,784,103
PULSED LIQUID JET DEVICE
William C. Cooley, 5400 Pooks Hill Rd., Bethesda, Md.
Filed Aug. 1, 1972, Ser. No. 277,077
Int. Cl. B05b 3/14
U.S. Cl. 239—101 **12 Claims**

A gas spring driven hydraulically cocked pulsed water jet device having a driving piston supported on a tubular member and reciprocable in a cylinder, the piston and tubular member arranged to be cocked by fluid pressure applied to a follower and adapted to be restrained in a cocked position by a locking means during the time the follower is retracted, the lock being



arranged to be released to fire the device thereby driving a ram carried on the end of the tubular member into a water filled cavity whereupon the water is caused to be extruded at high pressure and high velocity through a nozzle.

3,784,104
GAS COOLER AND ATOMIZING SPRAY NOZZLE THEREOF
Charles A. Hartung, Kearny, Ariz., assignor to Kennecott Copper Corporation, New York City, N.Y.
Filed May 1, 1972, Ser. No. 248,967
Int. Cl. B05b 3/14
U.S. Cl. 239—102 **3 Claims**

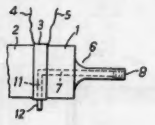


The usual vertical reactor vessel of a conventional gas cooler of a fluosolids or other dust-generating system has combined therewith special atomizing spray nozzles constructed and arranged in the reactor vessel to eliminate caking, on interior walls of the reactor vessel, of particulate solids suspended in the entering hot gas, and, thus, the necessity of digging out the caked solids at frequent intervals. The spray nozzles are of acoustic resonance type having respective resonator cups spaced from air-water-mixing nozzle discharge to interrupt, atomize, and disseminate the air-water streams. In accordance with the invention, the space between nozzle discharge and resonator cup of such a nozzle is protected against induction of particulate solids by a cylindrically tubular shield, thereby protecting nozzle parts against abrasion and the air-water stream against entrainment of solids. In contrast to conventional gas coolers, relatively few nozzles of relatively great capacity are positioned in the top only of the reactor vessel, the remainder of the reactor vessel being free of spray nozzles.

3,784,105
ATOMIZING DEVICES FOR LIQUID FUEL
Mark Wallinger Goodinge, Brentwood, and Norman Moss, Ilford, both of England, assignors to Plessey Handel und Investments A.G., Zug, Switzerland
Filed June 27, 1972, Ser. No. 266,778
Claims priority, application Great Britain, June 29, 1971, 30,370/71
Int. Cl. B05b 1/34, 1/08, 17/06
U.S. Cl. 239—102 **5 Claims**

In the end portion of a fuel-atomization nozzle in which the fuel passage contains at its end pressure-atomization means as well as an end opening for atomization by ultrasonic vibration of the nozzle, the pressure-atomization means include a swirl

plug having helical passages and, spaced from it by a swirl chamber, an orifice disc containing a final orifice of smaller diameter than the plug. Both the plug and the disc are secured in a larger-diameter counter-bore at the end of the fuel

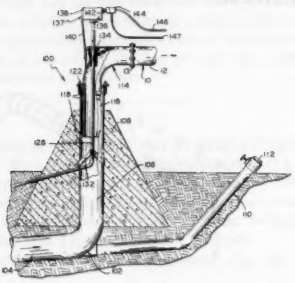


passage. They are secured in the counter-bore by electron-beam welding, the plug by radial spot welding through the wall, and the disc by a circumferential weld, which also forms seal closing the ends of the counter-bore.

3,784,106
IRRIGATION CENTER PIVOT STRUCTURE

Warren N. Ross, 2123 N. First St., Hermiston, Oreg.

Division of Ser. No. 836,739, June 26, 1969, abandoned. This application Feb. 25, 1971, Ser. No. 119,024
Int. Cl. B05b *3/00*
U.S. Cl. 239—177 **1 Claim**



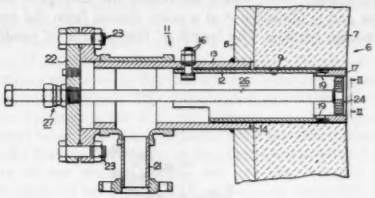
An irrigation line move has a pipe supported by carriages with flexible, tapered trusses below the pipe extending between the carriages with the central portions of the trusses rotatable on and slidable along the pipe. Control boxes over the carriages mount switches which are actuated by bars attached to the pipe to stop the carriages when excessive misalignment is approached. A center pivot water supply device has a flushing exit, and a slip ring connector for electrical power to electric motor drives of the carriages. The carriages have adjustable wheel supports to provide toe-in.

3,784,107
NOZZLE FOR ROTARY KILN

Eugene F. Rossi, Wauwatosa, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 25, 1972, Ser. No. 300,716
Int. Cl. B05b *3/00, 15/10*
U.S. Cl. 239—208 **3 Claims**

A nozzle connected to a kiln for supplying fluid thereto wherein the nozzle orifice plate is supported by an elongated rod extending through the nozzle body to the exterior thereof. The exterior end of the support rod can be manipulated to

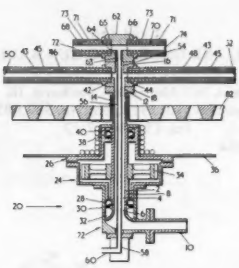


cause movement of the orifice plate relative to the nozzle body and thereby prohibit material buildup at the inner end of the nozzle.

3,784,108
FLUIDIZED BED APPARATUS

Herbert Raymond Hoy, Surrey; Ronald Leslie Johnson, Bletchley, and Whalley Vowe Battcock, Surrey, all of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Dec. 7, 1971, Ser. No. 205,559
Claims priority, application Great Britain, Dec. 23, 1970, 61,032/70
Int. Cl. B05b *3/02*
U.S. Cl. 239—264 **9 Claims**



Fluid material distributing apparatus for use in a fluidized bed consists of a rotatable shaft having a longitudinal passage therein communicating with nozzle members located adjacent an outlet of the shaft. The nozzle members are tubular arms affixed to a distribution head carried by the shaft. Fluid material is, in use, conveyed, e.g. pneumatically, through the passage and discharges through the arms by virtue of centrifugal force generated by the rotation of the shaft, the material thereby being distributed within the fluidized bed.

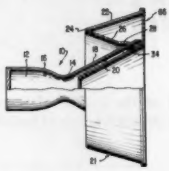
3,784,109
DEPLOYABLE NOZZLE EXTENSION FOR ROCKET ENGINES

John Wilbur Dueringer, Kenmore, N.Y., assignor to Textron, Inc., Providence, R.I.

Filed May 22, 1972, Ser. No. 255,394
Int. Cl. B63h *11/10*
U.S. Cl. 239—265.19 **14 Claims**

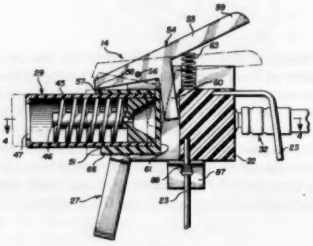
A deployable nozzle for rocket engines and method of making same is disclosed in which the extension initially is in collapsed state and is provided with a detachable cover so that internal pressure may be utilized to extend and deploy the extension. The extension includes an outer convolution of annular divergent frusto-conical form joined along a fold line to an intermediate convolution also of frusto-conical form but

directed oppositely from the outer convolution and the intermediate convolution is joined at its small end to a divergent frusto-conical rocket nozzle portion through a relatively narrow cylindrical band which surrounds the divergent nozzle portion and is joined to it at a point spaced from the end of such nozzle portion. The length of this band is of predeter-



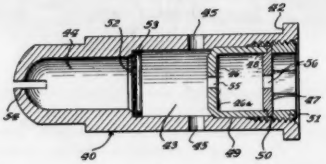
mined relation with respect to the length of the free end portion of the nozzle extension such that when the nozzle extension is deployed, it will unroll over the edge of the free end of the nozzle extension to embrace it and form a non-offset and coplanar extension of the inner surface of the rocket nozzle portion.

3,784,110
MIXING AND DISPENSING GUN HAVING A REPLACEABLE NOZZLE
William R. Brooks, 365 Alexander, Elmhurst, Ill.
Filed Nov. 16, 1972, Ser. No. 307,092
Int. Cl. B05b *7/12*
U.S. Cl. 239—304 **5 Claims**



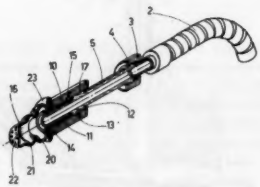
A dispensing gun for fluids such as urethane foam and the like is provided in which separate fluid components are individually led to the gun and are mixed within a replaceable mixing and dispensing nozzle member. After gun use, the used nozzle member can be removed for cleaning or replacement with a fresh nozzle, thereby obviating difficulties encountered in cleaning and purging the entire gun. Also disclosed are inexpensive and effective component fluid flow control valves, which are opened by a gun trigger. Each valve is positively closed into a fluid-tight seal by pressure of the controlled fluid against a sealing resilient ball member, and is opened by the action of a plunger against the ball member.

3,784,111
FOAM PRODUCING NOZZLE
Richard G. Piggott, Bellwood, Ill., assignor to Spraying Systems Co., Wheaton, Ill.
Filed Mar. 29, 1972, Ser. No. 239,167
Int. Cl. B05b *7/00*
U.S. Cl. 239—427.3 **5 Claims**



A foam producing nozzle of the type using an air and fluid mixing chamber for discharging a foaming stream from the nozzle. A pair of spaced orifice plates are between the nozzle inlet and the mixing chamber and arranged to enhance the foam producing effect.

3,784,112
NOZZLE
Jean Collignon, Villa "Fleur des bois", Chamonix, France
Filed Apr. 21, 1972, Ser. No. 246,284
Claims priority, application France, Apr. 27, 1971, 7116458
Int. Cl. B05b *1/16*
U.S. Cl. 239—443 **9 Claims**

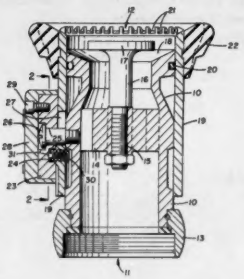


A nozzle to provide either a weak dispersed jet or a strong concentrated jet comprises a sprayer with stages in the form of hollow rings joined together, each ring having the same inner diameter as the others, the stages having slant perforations for the emission of liquid. The sprayer slides on a tube supplying the liquid, the tube end acting as a regulator. If the tube is only just inserted in the sprayer, all the perforations of all the stages omit a diffused spray. As the regulator is further inserted in the sprayer, stages are progressively cut out until only the end one, pierced with a few axial holes, emits liquid in a concentrated jet.

3,784,113
NOZZLE
Glenn E. Specht, Charles Town, W. Va., assignor to American La France Inc., Willoughby, Ohio
Filed Sept. 11, 1972, Ser. No. 288,017
Int. Cl. B05b *1/30*
U.S. Cl. 239—460 **8 Claims**

A fire hose nozzle of the high constant gallonage class positions a cylindrical stream pattern sleeve for reciprocal motion around and about a beveled discharge orifice in the nozzle which includes a centrally positioned baffle. A rotatable dial on the nozzle has a cam channel therein engaging a detent on

the cylindrical sleeve for imparting reciprocal motion thereto, the cam channel being so formed that rotation of the same to



predetermined positions locates the pattern forming sleeve so as to provide a straight stream, narrow fog or wide fog patterns as desired.

3,784,114

PROTEIN-ENRICHED WHEY FRACTIONS

Ivan A. Wolff, Oreland, Pa., and Arthur C. Stringfellow, Washington, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed June 7, 1972, Ser. No. 260,573
Int. Cl. B02c *13/14*
U.S. Cl. 241—24 **2 Claims**

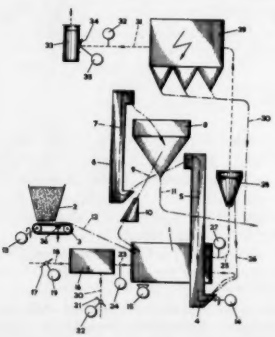
Protein-enriched and lactose-enriched whey fractions are obtained by fine grinding dried whey in a pin or other impact milling device operated in the range of about 9,000 to 14,000 r.p.m. and then air classifying the fine ground whey into sized fractions in a standard air classifier.

3,784,115

PROCESS FOR THE MANUFACTURING OF DRY MATERIAL, BY CRUSHING, GRINDING OR MILLING

Willem Krijger, Uitgeest, and Jacobus J. Burger, Driehuis, both of Netherlands, assignors to Koninklijke Nederlandsche Hoogoverns En Staalfabrieken N.V., Ijmuiden, Netherlands

Filed Oct. 12, 1971, Ser. No. 188,265
Claims priority, application Netherlands, Oct. 12, 1970, 7014936
Int. Cl. B02c *25/00*
U.S. Cl. 241—30 **5 Claims**



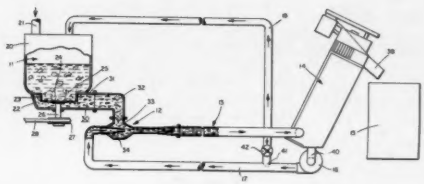
The method of controlling a process for the production of dry material on a continuous feed and discharge basis such as, for example, ore pellets, in a mill unit by the crushing, grinding or milling of the dry material is achieved by measuring the amount of material being fed and the amount of process material being discharged to obtain a first signal value and a second signal value, respectively, with each of these two signal values being thereafter fed to a first control means. The degree of fill of the milling unit is electroacoustically detected to obtain a signal value therefor which is thereafter passed to a second control means. The output signal of the second control means is passed to the first control means to adjust same to a constant value. The output signal of the first control means adjusts the first control means so that the first and second signal values of the material being fed and the material being discharged will be substantially equal during the processing of the dry material.

3,784,116

PULPING SYSTEM WITH JET ASSIST FOR PULPER DISCHARGE

Wayne T. Buckman, Pipersville; Blaine Monroe Miller, Malvern, and Thomas Robert Lewis, Hatboro, all of Pa., assignors to Wascon Systems Incorporated, Hatboro, Pa.

Filed Sept. 28, 1971, Ser. No. 184,461
Int. Cl. B02c *18/40*
U.S. Cl. 241—46.17 **2 Claims**



A pulping system is disclosed herein, having a pulping tank wherein waste is abraded and comminuted, and discharged therefrom, to a press as a water-waste slurry. Water is extracted from solids in the press, and is pumped therefrom, through a jet located at the pulper discharge, with the jet being operative to educt slurry from the pulper, and to assist its conveyance to the press. Waste water which feeds the jet is extracted from a return line of press water being recycled to the pulper.

3,784,117

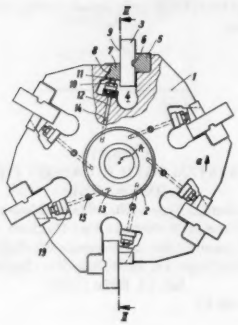
ROTOR FOR USE IN IMPACT CRUSHERS

Rolf Koenig, Handorf, and Gerhard Hemesath, Munster, both of Germany, assignors to Hazemag Hartzerkleinerungs Und Zement-Maschinenbau-Gesellschaft mbH, Muenster, Germany

Filed Sept. 29, 1972, Ser. No. 293,373
Claims priority, application Germany, Sept. 30, 1971, P 21 48 752.5
Int. Cl. B02c *13/06, 13/28*
U.S. Cl. 241—191 **10 Claims**

A rotor body is composed of a plurality of axially spaced parallel plates which are rigidly connected for rotation about a

joint axis. The outer periphery of the rotor body is provided with slots extending inwardly of the periphery and in parallelism with the axis, and impact bars are arranged in the respective slots. Between the bars and one sidewall of each slot is mounted a support bar which interengages with the impact bar, the latter extending to some extent outwardly beyond the periphery of the rotor body. Between the other sidewall of the slot and the impact bar is arranged a wedge member which is urged to wedging position by a plurality of pressure-fluid



operated elements arranged in the slots and being connected via branch conduits with main pressure fluid conduits arranged in the rotor body.

3,784,118

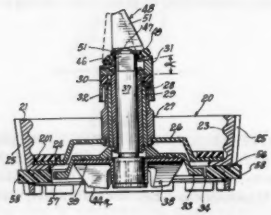
MIXING AND COMMINUTING APPARATUS

Mathew Hurwitz, 63 Oakland Ave., Auburndale, Mass.

Filed Feb. 7, 1972, Ser. No. 224,111

Int. Cl. B02c *18/12*

U.S. Cl. 241—282.1 **16 Claims**



An agitator and cutter assembly for a food blender and the like having cutter blades arranged so that they may be tilted from a vertical axis to change the pitch of the blades.

3,784,119

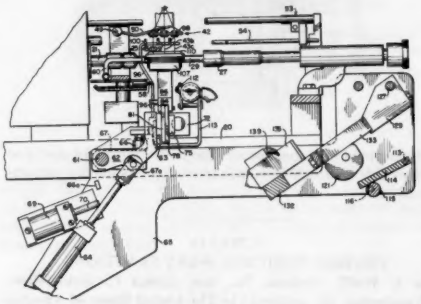
APPARATUS FOR FASTENING YARN WINDING TAILS

Samuel P. Kenworthy, Phoenixville, Pa., and Marcus A. Hall, Branford, Conn., assignors to Frederic S. Claghorn, Chester Hill; John H. DeWitt, Huntington Valley and d/b/a Cezoma International, Royersford, Pa.

Filed Feb. 22, 1972, Ser. No. 228,042

Int. Cl. B65h *54/10*

U.S. Cl. 242—18 R **7 Claims**



In the formation of a winding of yarn wherein a tail is left on the winding, a method and apparatus for releaseably fastening the tail which involves placing a bead of adhesive over the tail on the winding and causing the adhesive to set.

3,784,120

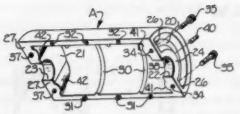
SPLIT DRIVE ROLL AND METHOD OF FORMING SAME

Ted D. Harris, Dallas, N.C., assignor to Universal Machine Company, Inc., Dallas, N.C.

Filed Dec. 26, 1972, Ser. No. 318,028

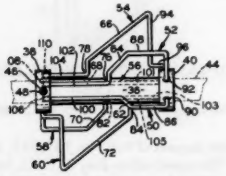
Int. Cl. B65h *54/46, 54/48*; B21b *31/00*

U.S. Cl. 242—18 DD **4 Claims**



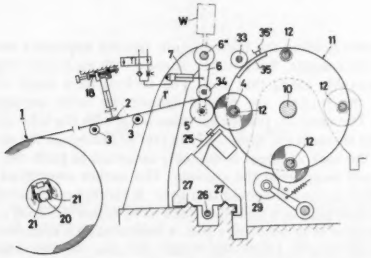
This drive roll is particularly adapted for use as the drive for rotating a yarn take-up package on a textile machine. The drive roll includes a pair of identical semi-circular molded plastic shell-like parts which may be easily mounted on and removed from a drive shaft. Each semi-circular shell includes a plurality of pins formed integrally with and spaced along one side of the shell and a plurality of matching recesses spaced along the other side of the shell and aligned with the pins so that the pins of one shell will mate with and be positioned in the recesses of the other shell when the shells are aligned and join at opposite sides of the drive shaft. Suitable fastening means is provided for maintaining the shells in joined together relationship and means is provided for preventing rotation of the assembled drive roll on the drive shaft.

3,784,121
TRAVERSING MECHANISM
David Michael Arno, Toledo, and John Gilbert Mohr, Maumee, both of Ohio, assignors to Johns-Manville Corporation, New York, N.Y.
Filed Mar. 2, 1971, Ser. No. 120,260
Int. Cl. B65h *54/28*
U.S. Cl. 242—43 14 Claims



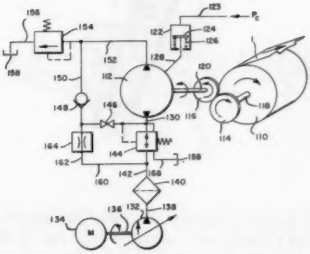
A traversing mechanism for strands comprising a series of cams mounted for rotation about an axis. Inclined working faces of the cams cooperate with faces parallel to the axis of rotation to traverse the strand over a path which maintains an essentially constant spacing from the axis of rotation during all traversing positions.

3,784,122
SHEET REWINDER
Hiroshi Kataoka, 5-8, Asahi 1-chome, Iyomishima, Japan
Filed Dec. 17, 1971, Ser. No. 209,074
Claims priority, application Japan, Dec. 18, 1970, 45/113030
Int. Cl. B65h *19/26, 19/06*
U.S. Cl. 242—56 A 8 Claims



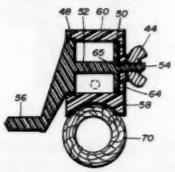
In the rewinding of a sheet from a feed roll onto smaller rolls, a bonding agent is applied to the upper surface of the sheet after a predetermined amount of the sheet has been wound to a predetermined tension and the sheet is cut so as to divided the area to which bonding agent has been applied to the front and rear. The front portion serves as a seal for the roll already wound while the rear portion serves to fasten the sheet to a new core.

3,784,123
TENSION CONTROL SYSTEM
Ernest E. Lewis, Topsfield, Mass., assignor to Whiteley Industries, Inc., Wilmington, Mass.
Filed Apr. 5, 1971, Ser. No. 130,925
Int. Cl. B65h *59/00*
U.S. Cl. 242—75.53 14 Claims



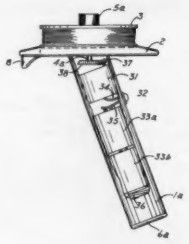
A tension control system for web movement and processing applications. The system employs improved tension reference and error detecting means together with variable displacement hydraulic units which provide for direct adjustment of driving and/or retarding torques to control web tension in response to set point and error signals.

3,784,124
FISHING REEL
Marvin T. Shumate, 2316 Liverpool, Mesquite, Tex., and Bobby G. Williams, 9551 Crestshire, Dallas, Tex.
Continuation-in-part of Ser. No. 26,586, April 8, 1970, abandoned. This application Oct. 22, 1971, Ser. No. 191,740
Int. Cl. A01k *89/02*
U.S. Cl. 242—84.1 R 2 Claims



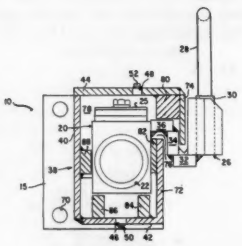
A reel designed primarily for cane pole fishing, the device having a construction which eliminates need to wind the line around the pole for adjusting length when fishing at different depths, one embodiment of the device comprising a housing securable to the fishing pole, a one-piece spool for storing line not in use, a housing end for enclosing the spool within the housing, a spool handle of crank shape and a winged nut for fitting the spool handle through the housing end, spool and spool housing, the spool handle serving to rotate the spool. In another embodiment of the invention, the reel is formed by the engagement of a housing having an annular shoulder adjacent its open end with a unitary spool body having an axle, two flanges and a crank.

3,784,125
FISHING APPARATUS
Richard D. Law, 10867 W. 30th Ave., Lakewood, Colo., and Robert E. Eckels, 2101 Youngfield St., Golden, Colo.
Filed July 22, 1971, Ser. No. 165,231
Int. Cl. A89k *89/00*
U.S. Cl. 242—96 **2 Claims**



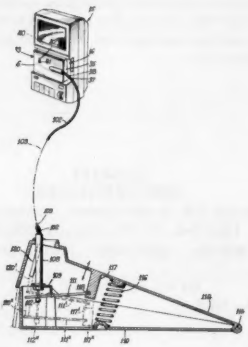
Fishing apparatus having a tubular disc-shaped member mounted on a handle and a rotatable open face spool for fishing line, drag for the spool being mechanically adjustable. Line feed and drag is further controllable by manipulation of the handle relative to the line direction.

3,784,126
LEVEL WIND SPOOLING DEVICE WITH A STABILIZING HOUSING
Eston F. Petry, McMurray, Pa., assignor to Consolidation Coal Company, Pittsburgh, Pa.
Filed June 14, 1972, Ser. No. 262,476
Int. Cl. B65h *57/28*
U.S. Cl. 242—158.3 **2 Claims**



The level wind spooling apparatus includes a spooling shaft mounted in a spooling device housing and connected to apparatus operable to rotate the spooling shaft. The outer cylindrical surface of the spooling shaft has formed therein a pair of compound threads including a right-hand thread and a left-hand thread, each thread having the same pitch. The root and side walls of each thread form a continuous cam track extending along the length of the spooling shaft. A cam track follower assembly mounted on the spooling shaft includes an actuator positioned in one of the cam tracks to guide the follower assembly longitudinally along the shaft during rotation of the shaft and operable to transfer, at either end of the shaft, to the oppositely oriented cam track for guidance of the follower assembly in a reverse direction longitudinally along the shaft to the other end thereof. The housing substantially encloses the spooling shaft and follower assembly along the length of the shaft. A longitudinal slot extends along the front of the housing to permit the passage along the housing of a flexible strand guide assembly connected to the follower assembly within the housing. A plurality of stabilizing guide members are secured in spaced relation with each other to the inside surfaces of the housing walls and extend inwardly therefrom adjacent to preselected portions of the external surfaces of the follower assembly and are arranged to guide and stabilize the follower assembly in its traverse along the spooling shaft. The housing walls form a substantially enclosed container for lubricating material for the spooling shaft, the surfaces of the guide members and the follower assembly.

3,784,127
TRANSCRIPTION CONTROL FOR CASSETTE TAPE PLAYER
Mario E. Bachmann, 1324 S. Finley Rd., Apt. 1C, Lombard, Ill.
Continuation-in-part of Ser. No. 131,012, April 5, 1971, abandoned. This application July 3, 1972, Ser. No. 268,536
Int. Cl. G03b *1/04*; **G11b** *15/32, 23/04*
U.S. Cl. 242—199 **24 Claims**



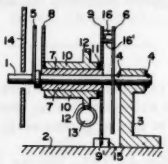
A case holding the transcription control apparatus mounts over the cassette. Sockets are aligned with each reel axis and are movable along that axis. The sockets have teeth which, when the sockets are moved against the reels, engage the reels. The teeth on the socket associated with the take-up reel project through the spokes of the reel to disengage the spindle from the reel. A finger is movably mounted to push the pressure roll away from the capstan. The socket associated with the feed reel is connected to a gear. A ratchet mechanism engages that gear in a direction such as to rotate the feed reel in the reverse of its feed direction. A foot control is connected by a Bowdin wire to a first slide within the case. An arm connects the first slide to a second slide. When the foot control is in the stop position, the first slide moves one or both sockets into the respective reels to disengage the spindles and the second slide moves the back-up roll away from the capstan. When the foot control is set in the play position the back-up roll is freed to press the tape against the capstan and the socket associated with the take-up reel is raised away from the respective reel. As the foot control is moved between the stop and backspace positions the back-up roll is held away from the capstan, the socket associated with the take-up reel is held in a position to disengage the respective spindle and the ratchet mechanism rotates the feed reel in a direction to take up tape thereon.

3,784,128

TAPE DRIVE CONTROL SYSTEM

Michinori Nagahiro, Nishinomiya; Toshiomi Yabu, Kyoto; Hiroo Hosono, Hirakata, and Masaharu Ushihara, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 13, 1972, Ser. No. 297,489
Claims priority, application Japan, Oct. 15, 1971, 46/95863
Int. Cl. B11b *15/32*; G03b *1/04*
U.S. Cl. 242—201 8 Claims



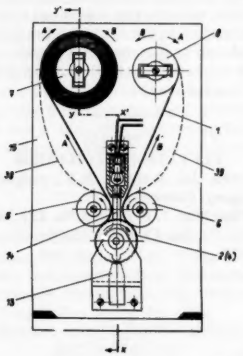
A system for automatically effecting various controls of the tape drive system in magnetic recording and reproducing systems or similar systems using magnetic tape in accordance with the tape position.

3,784,129

ALTERNATE WINDING AND UNWINDING OF A TWO-ENDED PROGRAM TAPE

Norbert Paul Bourgeois, Troyes, France, assignor to Etudes et Bonneterie S.A., Lausanne, Switzerland

Filed Feb. 25, 1972, Ser. No. 229,542
Claims priority, application Switzerland, Mar. 5, 1971, 3245/71
Int. Cl. B11b *15/32*; G11b *5/00*; G03b *1/04*
U.S. Cl. 242—201 7 Claims



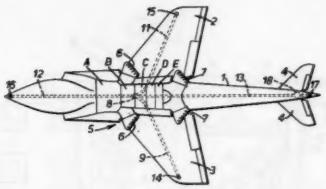
A two-ended program tape is alternately wound and unwound between two spools by a reversible motor, the spools being connected to this reversible motor via couplers and respective clutches so that the tape-receiving spool is also driven by the motor, and each spool also having a respective auxiliary motor. When a pre-reversal data on the tape passes under a reader, the clutch of the receiving spool is disengaged and its auxiliary motor supplied to rotate in the opposite direction thereby forming a length of loose tape between this spool and the reversible motor. A subsequent reading of a reversal data on the tape actuates reversal of the main motor and engagement of the clutch of the empty spool which is driven in the direction to wind tape thereon, supply to the auxiliary motor of the first spool being cut when the pre-reversal data passes back under the reader.

3,784,130

FUEL SYSTEMS FOR AIRCRAFT GAS TURBINE ENGINES

Keith Robinson, Churchdown, England, assignor to Dowty Fuel Systems Limited, Cheltenham, England

Filed Feb. 29, 1972, Ser. No. 230,494
Claims priority, application Great Britain, Jan. 10, 1972, 1,093/72
Int. Cl. B64d *31/00*; F02k *3/02*
U.S. Cl. 244—76 J 9 Claims



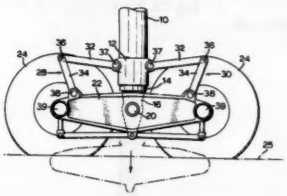
In an aircraft having a gas-turbine engine, one or more main jet nozzles directed downwardly to provide weight-supporting thrust for the aircraft, a plurality of stabilising nozzles, duct-means for feeding air at pressure from the engine compressor to the stabilising nozzles, and a pilot's adjustable valve means for adjusting air flow from the stabilising nozzles to control the attitude of the aircraft, the provision of a fuel system for the engine comprising, a source of fuel at pressure, a constant speed fuel flow control to feed fuel from the source to the engine for constant and slowly varying speeds, an acceleration fuel flow control to feed fuel from the source to the engine during engine acceleration at a rate ensuring safe acceleration without compressor stall, an auxiliary fuel flow control and control means for said auxiliary fuel flow control responsive to air flow to one or more stabilising nozzles to supply extra fuel flow to the engine during engine acceleration over and above the fuel flow supplied by the acceleration fuel flow control.

3,784,131

AIRCRAFT LANDING GEAR

Henry Ralph Stratford, 337 Fairview Dr., Whitby, Ontario, Canada

Filed May 19, 1972, Ser. No. 255,096
Int. Cl. B64c *25/58*
U.S. Cl. 244—102 R 4 Claims



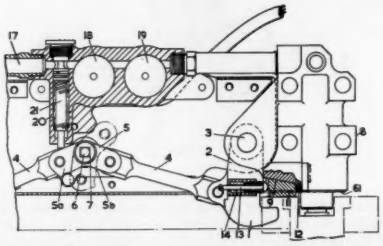
This invention provides an aircraft landing gear in which a bogie axle is mounted horizontally in bearing means at the bottom of a vertical strut which incorporates a shock absorber cylinder. The bogie beam extends in either direction from the bearing means and the latter is constructed for minimal resistance to rolling movement, preferably by incorporating a spherical bearing surface. Resistance to rolling movement is provided by two torque linkages extending between the vertical strut above the shock absorber piston and the ends of the bogie beam.

3,784,132

EJECTOR RELEASE UNITS

Cyril Newell, Odiham, England, assignor to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Mar. 20, 1972, Ser. No. 236,387
Claims priority, application Great Britain, Mar. 25, 1971, 7,772/71
Int. Cl. B64d 1/02
U.S. Cl. 244—137 R 3 Claims



An ejector release unit, for carrying aircraft stores such as bombs, enables securing and crutching of a store to be accomplished in one manoeuvre. The store must have two saddles spaced apart thereon, with store-facing surfaces on the saddle. The preferred release unit has two hooks for each saddle, the hooks engaging the store-facing surfaces. Wedges between the top of each saddle and structure of the unit are forced into engagement with saddle and structure by spring loaded plungers associated with the hooks. A manually operable crank and lever arrangement allows hooks to be engaged or disengaged with a store, and plungers to be engaged with or disengaged from wedges as required. Any movement of store relative to unit after engagement results in tightening of the wedges. Operationally stores are released by a cartridge operated piston acting on the crank.

3,784,133

SEAM FOR WOVEN PAPER MAKING FABRICS

Vernon J. Hill, Jr., Chagrin Falls; Earl A. Southam, Cleveland Heights, both of Ohio, and John R. McDowell, Knoxville, Tenn., assignors to The Lindsay Wire Weaving Company, Cleveland, Ohio

Filed Jan. 19, 1972, Ser. No. 219,050
Int. Cl. B21f 27/10
U.S. Cl. 245—10 2 Claims

A seam for joining opposite ends of a woven fabric to form a loop or belt suitable for various uses in connection with paper making machines. The seam is formed by using weft strands from the woven fabric for seam wefts. Weft strands on each end of the woven fabric are removed to leave warp pickets which are then interwoven with the seam wefts to form the seam, whereby the pattern of the weave across the seam is the same as that in the body of the fabric. The ends of successive warp strands are terminated over different seam wefts in a pattern which includes at least a six-warp sequence. The ends of adjacent warp strands terminate in spaced rows of seam wefts in a repeated sequence with a plurality of seam wefts between adjacent rows. The spacing and direction of the respective warp terminations are such as to achieve suitable seam strength and a reduced tendency to mark the paper sheet formed on the belt.

3,784,134

SWITCH FOR RAIL VEHICLES

Gunter Claus, and Friedrich Doring, both of Bochum, Germany, assignors to Krupp Huttenwerke AG, Alleestr., Germany

Filed Mar. 14, 1972, Ser. No. 234,567
Claims priority, application Germany, Mar. 27, 1971, P 21 14 926.8
Int. Cl. E01b 7/00
U.S. Cl. 246—446 17 Claims

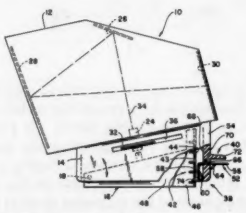
An improvement in a switch for rail vehicles having a switch and pivoting frog in which the frog point can be joined to either of the rails which are disposed within the frog wherein there are longitudinally displaceable rails ahead of the switch which can be brought to contact a set of movable lateral deflectable rails. A system is disclosed wherein there are non-movable rails, i.e., non-pivoting rails ahead of the frog point of the switch. According to the disclosure branch track rails are provided which can be elevated or depressed with respect to the main track rails suitably at the beginning of the entrance of the switch. These rails can be canted.

3,784,135

ELEVATION MECHANISM

William S. Owen, Jr., Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

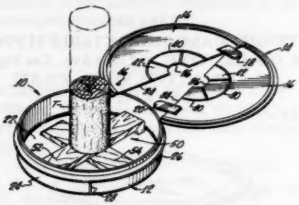
Filed Mar. 7, 1972, Ser. No. 232,382
Int. Cl. F16m 13/00
U.S. Cl. 248—11 6 Claims



An elevation mechanism for varying the angle of a main housing relative to a base pivoted to the housing is disclosed. At the front of the base is provided a series of vertically disposed openings or indentations into one of which a detent finger supported by the front of the housing is adapted to be inserted. The finger preferably comprises a part of an operational member having spring members and a operating surface

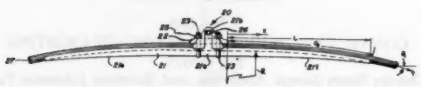
whereby pressure applied to the operating surface will compress the spring members and retract the finger to permit rotation of the housing relative to the base. When pressure is withdrawn from the operating surface the spring members urge the finger into an opening in the base to establish the desired angle of the base relative to the housing.

3,784,136
CHRISTMAS TREE STAND HOLDER
Erlindo C. Lopez, 9270 Hemlock, Cucamonga, Calif.
Filed Aug. 18, 1972, Ser. No. 281,995
Int. Cl. A47g *33/12*
U.S. Cl. 248—44 **5 Claims**



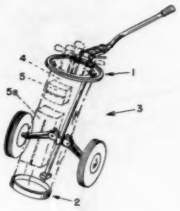
A device for holding the wooden Christmas tree stand with the bottom end of the tree trunk submerged in water, so that the tree can take up water and retain its freshness. The device comprises a shallow, flat-bottomed basin of sufficient lateral dimension to receive the conventional wooden stand, and sufficient depth to hold water to cover the stand and the cut end of the trunk. A two-piece lid is provided, in which the two halves are hinged together near one edge, so that they can be swung apart to pass the tree trunk between them, said halves being brought together with the trunk in the center. A swinging latch on one of the halves fastenes to the other half to tie the two lid halves together. At its center, the lid has a circular opening to receive the tree trunk, and a series of slots radiating from the opening form flaps that bend upwardly to accommodate a trunk that is larger than the opening. Score lines provide lines of weakness, so that the flaps will bend up freely at their bases.

3,784,137
TRANSMISSION LINE CABLE CLAMP
Fletcher C. Eddens, Wilmington, N.C.; William P. Corley, Birmingham, Ala.; Jack Ronald Salling, Birmingham, Ala., and Ralph E. McDonald, Birmingham, Ala., assignors to Anderson Electric Corporation, Leeds, Ala.
Filed Dec. 1, 1971, Ser. No. 203,652
Int. Cl. F16l *3/00*
U.S. Cl. 248—63 **7 Claims**



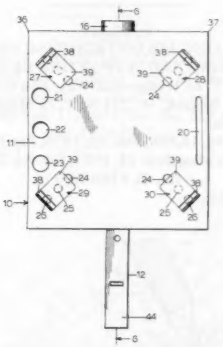
An elongate tapered clamp body is designed to flex under load in such a manner as to provide an arcuate support of large radius for a suspended cable. A pair of U-bolts clamp the cable between the clamp body and an upper keeper.

3,784,138
ROTATABLE GOLF BAG HOLDER
Charles A. Herling, 1308 Orchard Hills Pl., Hagerstown, Md., and Bernard L. Maizlish, 1016 Flagtree Ln., Baltimore, Md.
Filed Apr. 14, 1972, Ser. No. 244,047
Int. Cl. A63b *55/08*
U.S. Cl. 248—96 **10 Claims**



A rotatable golf bag holder for use on various types of golf carts. The holder includes a rotatable base on which the bottom of a conventional pocketed golf bag rests and a rotatable ring assembly which encircles and clamps the top of the golf bag, permitting full 360° rotation of the holder and bag to provide easy access to the ball and accessory pockets thereof.

3,784,139
ARTICLE SUPPORT AND LADDER ATTACHMENT
Carter D. Ellis, R.D. No. 2, Fairview, Pa.
Filed July 3, 1972, Ser. No. 268,900
Int. Cl. E06c *7/14*
U.S. Cl. 248—210 **6 Claims**



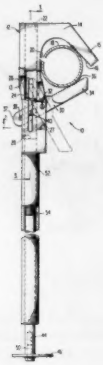
A paint bucket support and ladder attachment is disclosed herein. The attachment has a platform and support member which may be received in a hollow rung of a ladder, and a locking means on the support member to clamp the support member in the hollow rung. The paint bucket support has a flat surface for supporting a paint bucket and lugs to hold the paint bucket in place. The platform has several holes in it which may receive such tools as putty knives, screwdrivers, and other similar tools.

3,784,140

REMOTE FASTENER FOR LAMPS AND THE LIKE

Sherwin Leonard Auerbach, 473 Vallejo St., San Francisco, Calif.

Filed Sept. 1, 1972, Ser. No. 285,929
Int. Cl. F16m *13/02*
U.S. Cl. 248—214 **12 Claims**



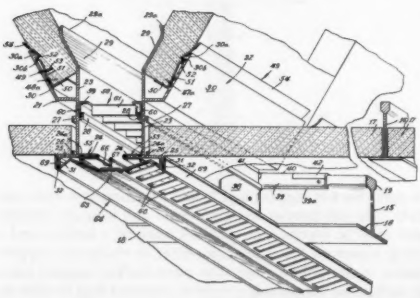
The fastener includes a head carrying a clamping jaw and an opening in which a rod is slidably received. Registering slots on the head and rod receive one end of a locking lever which is pivotally connected to the head. The opposite end of the lever carries a clamping jaw. A pin is carried by the rod and engages in a slot on the one lever end whereby reciprocating movement of the rod moves the jaw carried by the lever toward and away from the fixed clamping jaw. To retain the fastener clamped about a support, a locking sleeve is threaded on the rod. By threading the sleeve into butting engagement against the head the jaw carried by the lever is maintained in engagement against the support. The opposite end of the rod pivotally mounts a lighting fixture or the like.

3,784,141

VENTILATING AIR DISTRIBUTING CHANNEL FASTENING AND SUPPORTING BRACKET

Joel R. Rachlin, 1785 Wedgewood Way, Elm Grove, Wis., and Rudolph Otto Neudek, W. 271 N. 1275 Meadowbrook Rd., Waukesha, Wis.

Division of Ser. No. 10,508, Feb. 11, 1970, Pat. No. 3,673,945.
This application June 12, 1972, Ser. No. 262,039
Int. Cl. F16b *1/00*
U.S. Cl. 248—214 **5 Claims**



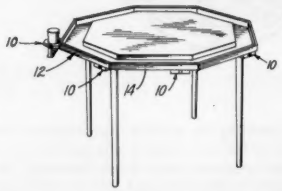
The supporting grid (e.g., main and cross inverted tees) of a suspended ceiling also completely supports ventilation air-distributing apparatus which may include the air supply duct. This apparatus, which is completely assembled before mounting in the grid, comprises a lower air flow channel section formed of two extruded metal bars having vertical webs with hooks on the outside of the web defining ways into which the wings of a bracket project to hold the spaced bars in a channel assembly. A clip integral with the bracket hooks over the top of a grid tee and has gripper conformations to mate with a clip on the opposite side of the tee to align channels. Along the top of the web of each bar are two outwardly extending spaced arms which are used to hold the sides of a fiberglass air duct. Between the webs and below the air duct is an optional air extractor. The air from the duct discharges out through the opening between the webs. At the bottom of the webs are flanges forming supports for ceiling panels and air flow control dampers.

3,784,142

EXTENSIBLE AND RETRACTABLE SUPPORT

Edward M. O'Brien, 1717 E. St. Louis Ave., Las Vegas, Nev.

Filed July 31, 1972, Ser. No. 276,672
Int. Cl. A47c *7/70*
U.S. Cl. 248—311 **5 Claims**



An extensible and retractable support mountable under a horizontal supporting structure, such as a counter top, table top, chair seat, or the like, and adapted, when extended, to hold a drinking glass, or other article. The extensible and retractable support includes a horizontal guide means adapted to be secured under the supporting structure inwardly of an outer edge thereof. A horizontal supporting member is slidable horizontally in the guide means between a retracted position beneath the supporting structure and an extended position wherein the supporting member projects outwardly beyond the outer edge of the supporting structure, the projecting portion of the supporting member being provided with an opening therethrough having an axis which is upright in both the extended and retracted positions of the support. A stirrup is pivotally mounted on the supporting member for gravity induced movement into a position below the opening when the supporting member is in its extended position, whereby a drinking glass, or other article, placed in the opening is seatable on the stirrup. The stirrup is pivotable upwardly into a position wherein it is aligned with the supporting member and is insertable into the guide means, whereby the stirrup is retractable into the guide means in response to movement of the supporting member into its retracted position.

3,784,143

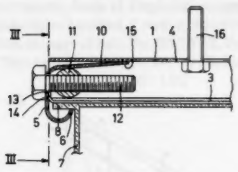
CONNECTION DEVICE FOR ELONGATE LIGHTING FITTINGS

Charles Henri Joseph Anderson, and Henricus Johannes Verwegen, both of Emmasingel, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 13, 1972, Ser. No. 271,349
Claims priority, application Germany, July 17, 1971, G 71 27 546.2
Int. Cl. F16m *13/02*
U.S. Cl. 248—316 R **2 Claims**

The invention to a device for securing against a wall an elongate lighting fitting which is provided with projecting

edges extending in its longitudinal direction, which device comprises a brace which is provided at its ends with hooks for clamping the edges of the lighting fitting. At least one of the



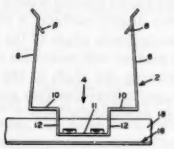
hooks is movable in the longitudinal direction of the brace and can be tightened in the direction transverse to the wall by means of a clamping member.

3,784,144

CEILING SYSTEM SUSPENSION CLIP

James C. Ollinger, Lancaster, and John W. Shenk, Columbia, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Aug. 9, 1972, Ser. No. 279,036
Int. Cl. F16l *3/00*
U.S. Cl. 248—317 **6 Claims**



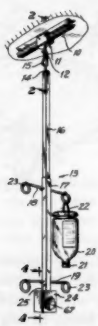
A U-shaped clip is fastened directly to the ceiling joists. Into the clip member is inserted a simple conventional runner member to which is fastened the ceiling tile. A spring finger structure is utilized to hold the runner member relative to the clip member.

3,784,145

HANGER FOR INTRAVENOUS BOTTLES

Raymond William Lawrie, Brooklyn, N.Y., assignor to Capital Cubicle, Inc., Brooklyn, N.Y.

Filed Mar. 31, 1972, Ser. No. 239,997
Int. Cl. F16m *13/00*
U.S. Cl. 248—334 **11 Claims**



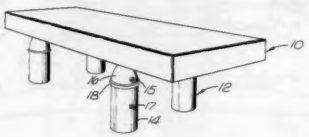
An adjustable intravenous bottle pendant assembly permitting heightwise and translatory adjustment of feeding units supported thereby by one hand operation by a nurse or hospital attendant.

3,784,146

HORIZONTAL VIBRATION ISOLATION SYSTEM

John W. Matthews, 17635 San Diego Cir., Fountain Valley, Calif.

Filed Apr. 24, 1972, Ser. No. 247,122
Int. Cl. F16m *11/22*
U.S. Cl. 248—358 R **10 Claims**



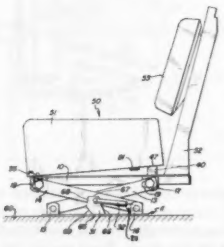
A horizontal vibration isolation system including a hollow piston defining a chamber closed by a top plate which is formed with a central aperture. An internal plate is suspended in the chamber by a plurality of cables secured between the top plate and the internal plate which supports a connecting rod which protrudes axially through the aperture in the top plate. The protruding end of the connecting rod is formed to be secured to the bottom surface of the member which is to be isolated from horizontal vibrations. The chamber may be filled with oil for damping the horizontal motion of the system at resonance. The cables may be solid metallic rods or be formed of braided wire. Each cable is swaged at its lower end, e.g., with a ball end, which fits into a hole therefor formed in the internal plate. The cables are adjustably secured to the top plate for aligning the internal plate to a desired horizontal position. In operation, a plurality of the pistons are provided, each of the pistons being secured to a bottom surface of the isolated member. Each of the pistons may be supported on a flexible diaphragm which provides vertical isolation of the vibrations, the diaphragm also forming the sealing surface of a fluid chamber, the fluid being a compressible gas such as air or nitrogen.

3,784,147

SEAT ADJUSTING MECHANISM

Arthur J. Harder, Jr., Franklin Park, Ill., assignor to Coach and Car Equipment Corporation, Elk Grove Village, Ill.

Filed Feb. 11, 1972, Ser. No. 225,474
Int. Cl. A47c *3/00*
U.S. Cl. 248—371 **3 Claims**



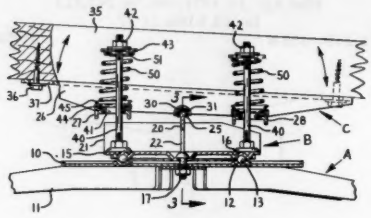
Vehicle seat is mounted on an assembly which moves seat vertically to a selected elevation corresponding to a setting on a polygonal plate without significant horizontal movement of the seat or plate. Vertical position of rearward portion of seat is adjusted by operation of a support means actuable by a seat occupant leaning forward and lifting said rear portion of the seat.

3,784,148

ROCKER BASE

Bernard E. Hill, P. O. Box 635 224 S. W. 5th St., Pendleton, Oreg.

Filed May 15, 1972, Ser. No. 253,020
Int. Cl. A47c 3/02
U.S. Cl. 248—382 6 Claims



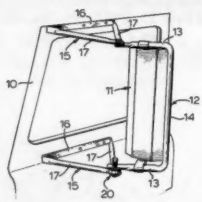
This is a swivel rocker base for a rocking chair. A rocker base frame is swivel mounted on a swivel base frame. A rocking trunnion comprising a steel rod is welded in horizontal position on the upper edge of a vertical plate which is mounted in diametral position on the rocker base frame. A rocker frame has a semicylindrical saddle bearing overlying the full length of the trunnion rod to support the chair. A nylon cushion is interposed as a bushing between the trunnion rod and saddle bearing. Four upstanding bolts on the rocker base frame extend upward through openings in the rocker frame, two of these bolts being on the front side of the trunnion rod and two on the rear side. Each bolt carries a coil spring compressed between a lower spring seat on the rocker frame and an upper spring seat on the upper end of the bolt whereby the springs are readily replaceable in case of breakage.

3,784,149

RETRACTABLE TRUCK MIRROR

Peter E. Brudy, Willowdale, Ontario, Canada, assignor to Dominion Auto Accessories Limited, Ontario, Canada

Filed Jan. 3, 1972, Ser. No. 214,594
Int. Cl. B60r 1/06
U.S. Cl. 248—478 18 Claims



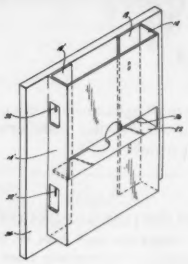
A truck mirror comprising a U-shaped support on which a mirror is pivotally mounted. The ends of arms of the support are pivoted to vertically spaced brackets that are adapted to be mounted on the truck. Pivot means are provided between the ends of the support arms and the brackets and comprise two members of low friction material. One of the members has axially extending circumferentially spaced grooves therein and the other of the members has complementary projections. The members are yieldingly urged toward one another such that the mirror is held in angularly adjusted position but may be readily moved to a new angular position by manual manipulation.

3,784,150

PICTURE SUPPORT

Barbara Kulicke, 43 East 10th St., New York, N.Y.

Filed Sept. 2, 1971, Ser. No. 177,258
Int. Cl. A47g 1/17
U.S. Cl. 248—496 1 Claim



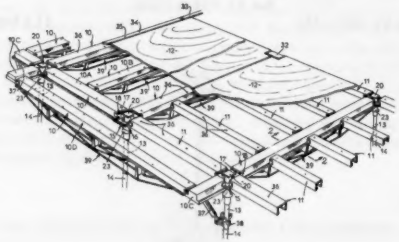
A picture support for mounting on the rear of a picture adapted to space the picture from a conventional picture display surface includes a shell formed from a front panel for frictionally engaging the display surface, a pair of opposed side panels connected to opposite edges of the front panel and extending toward the picture and means for engaging the rear of the picture for fastening the shell to the picture. The front panel has at least one transverse flap mounted to pivot inwardly of the shell to stabilize the shell.

3,784,151

FORMWORK FOR USE IN SUPPORTING SHUTTERING

Raymond Ernest Steele, Kenilworth, England, assignor to Kwikform Limited, Birmingham, England

Filed Apr. 24, 1972, Ser. No. 246,824
Claims priority, application Great Britain, Apr. 28, 1971, 11,757/71
Int. Cl. E04g 11/08
U.S. Cl. 249—18 15 Claims



Formwork for supporting shuttering panels for forming concrete floors and the like, comprising vertical props, between the heads of which extend shuttering supporting beams, the beams and heads having upstanding edge flanges for engaging with dependent projections on the ends of shuttering supporting transoms which extend between the prop heads and/or the beams.

3,784,152

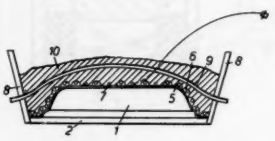
PROCESS OF PRODUCING A COMPOSITE MOLD HAVING COOLING PIPES EMBEDDED THEREIN

Paul Johnson Garner, Thorp Bay, and Thomas Robert Stephen Collins, Letchworth, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 885,172, Dec. 15, 1969, abandoned. This application Apr. 24, 1972, Ser. No. 246,926

Int. Cl. B29c *1/02*

U.S. Cl. 249—80 38 Claims



Producing a mould by spraying a metal shell around a model, attaching pipes to the shell with a metal filled epoxy resin and subsequently backing the shell with a reinforcing material to enable the shell to be used in moulding, the method of attaching the pipes being such that no air pockets are formed in the region of the underside of the pipes adjacent the shell after the reinforcing material has been applied.

3,784,153

ROLLING MILL ROLL COOLANT CONTROL

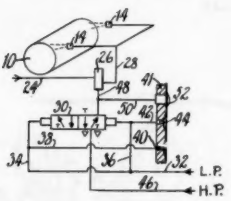
Hugh MacDonald Ross, and Allan Ball, both of Parkstone, England, assignors to Loewy Robertson Engineering Company Limited, Dorset, England

Filed Apr. 12, 1972, Ser. No. 243,212

Claims priority, application Great Britain, Apr. 15, 1971, 9,508/71

Int. Cl. G06c *7/02*; F16k *31/14*

U.S. Cl. 251—25 8 Claims



A control panel for use with a pneumatic control system has a plurality of openings on one face of the panel positioned relative to guide means on the panel so that an operator can temporarily cover up the openings by sliding a closure member, guided by the guide means, over the face of the panel to cover up in turn the openings beneath the path of travel of the closure member. The member is conveniently the operator's finger. By closing the openings, pneumatically operable switching components forming part of the control system are actuated. The components are pneumatically connected to the openings on the panel at a postiion away from the face of the panel.

3,784,154

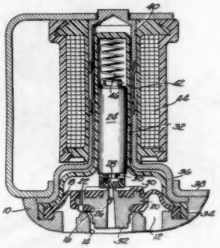
WATER VALVE DIAPHRAGM

Edwin A. Ostrowski, Mount Prospect, and Charles A. De Lew, Des Plaines, both of Ill., assignors to Controls Company of America, Melrose Park, Ill.

Filed Oct. 12, 1970, Ser. No. 79,975

Int. Cl. F16k *31/06*, *31/385*

U.S. Cl. 251—30 5 Claims



The rigid, plastic insert molded into the diaphragm has a raised seat against which the soft tip, solenoid plunger seats with no need for critical registry, thus allowing greater clearance between the plunger and guide. The insert includes a depending boss which cooperates with the outlet to throttle flow during closure to reduce water hammer. The necessary bleed hole is in the insert for greater precision and uniformity of operation. The diaphragm material is molded to include a spacer preventing seating the bleed hole against the cup-like portion of the guide with consequent inability to close.

3,784,155

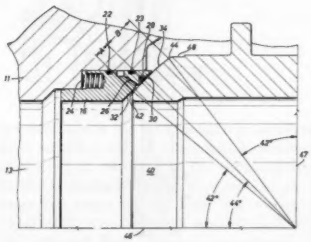
BALL AND SEAT ARRANGEMENT FOR BALL VALVE

Jerry B. Tomlin, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 228,999, Feb. 24, 1972, abandoned. This application Apr. 13, 1973, Ser. No. 351,125

Int. Cl. F16k *5/06*, *5/20*

U.S. Cl. 251—181 4 Claims



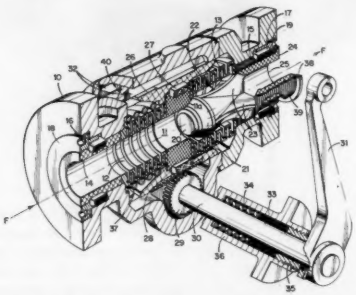
The purpose of the invention is to eliminate or minimize seat seal damage which occurs when opening a ball valve under full differential pressure. The seat seals are angularly displaced from the conventional position of 45° to the valve axis, to a position closer to the axis. The spherical seating surfaces of the ball extend equally on either side of the 45° lines. As the ball rotates to open the valve or to close the valve, the seal is first uncovered where the ball and seat form a metal to metal back-up downstream of the seal, which protects the seal against blowout or damage.

3,784,156

VALVE

Herbert Paetzel, and Horst Pfeiffer, both of Oedt-Mulhausen, Germany, assignors to Masoneilan International, Inc., Norwood, Mass.

Filed Feb. 23, 1972, Ser. No. 228,567
Claims priority, application Germany, Feb. 25, 1971, P 21 09 217.1
Int. Cl. F16k 31/53
U.S. Cl. 251—250 16 Claims



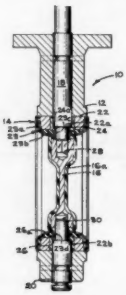
Corrosive fluid valve having a fixed valve plug and a shiftable valve seat ring. A fluid passage liner comprising flexible bellows endwise-engaging the seat ring, and which liner seals the valve end-to-end without any inside sealing points. A valve actuator engaging the seat ring to open and close the valve from outside the valve passage, and sealed off by the liner from exposure to the corrosive fluid.

3,784,157

BUTTERFLY VALVE STEM SEAL ENERGIZER

Frank G. Wenglar, Houston, Tex., assignor to FMC Corporation, San Jose, Calif.

Filed May 15, 1972, Ser. No. 253,369
Int. Cl. F16k 1/22
U.S. Cl. 251—306 14 Claims



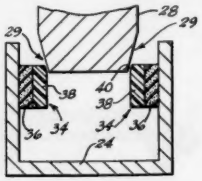
A butterfly valve with an improved valve stem seal that maintains a positive seal with a valve disc. In the valve, a removeable valve seat assembly fitted within the valve body is provided with rigid sleeve-type seat energizers disposed about the valve stems to compress liner material of the seat assembly into sealing contact with adjacent valve disc surface portions. Each seat energizer is disposed in a radial bore in the valve seat assembly with its radially outermost end pushed radially inward by the valve body to compress seat liner material between the valve disc and the radially innermost end of the seat energizer.

3,784,158

FLUID-FLOW CONTROL VALVES AND SEALING MEANS THEREFOR

Gordon Milford Cave, Solihull, England, assignor to Coplastix Limited, Redditch, Worcestershire, England

Filed May 1, 1972, Ser. No. 248,987
Int. Cl. F16k 3/12
U.S. Cl. 251—327 13 Claims



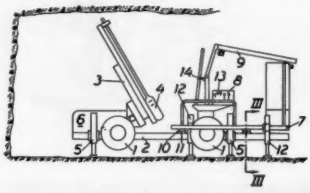
A valve of the type comprising a sliding closure member slidable across an opening to control flow of fluid through the opening and including a frame, a closure member slidable in the frame between an open condition and a closed condition, and a sealing member so disposed and arranged as to be compressed when the closure member is in the closed condition between adjacent surface portions of the frame and the closure member respectively to effect a seal between the frame and the closure member, the sealing member comprising a portion of resilient material bonded to one of said surface portions and a bearing portion bonded to said resilient portion and bearing on said other surface portion and having a low coefficient of friction with respect of said resilient portion and said other surface portion, said bearing portion being arranged to slide on said other surface portion as the closure member is moved between its closed and open conditions in the operation of the valve.

3,784,159

MOBILE, ROCK DRILL SUPPORTING RIG

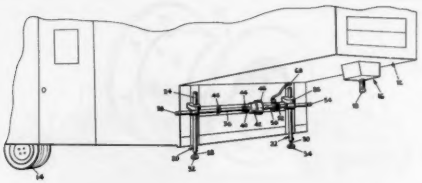
Rune Carl Valfrid Skattman, 1, 96 Gubbangsvagen, Enskede, and Olov Richard Bjork, 2, 7 Lasarettsvagen, Ektorp, both of Sweden

Filed Mar. 17, 1971, Ser. No. 125,957
Claims priority, application Sweden, Mar. 19, 1970, 3611
Int. Cl. B66f 7/26; E21c 11/02
U.S. Cl. 254—45 11 Claims



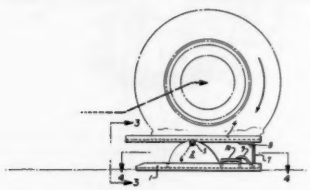
The drill rig comprises a mobile chassis, rock drill supporting means mounted on the chassis, hydraulic jacks attached to the chassis for setting up the rig in a work position, an operator's platform resting upon the chassis in a transport position by means of cooperating support means and lift and support means attached to the platform for separating the platform from the chassis into a work position in which the vibrations in the chassis, caused by the rock drill or drills, are not transferred to the platform.

3,784,160
VEHICLE SUPPORT SYSTEM
David P. Phillips, Lookout Mountain, Tenn., assignor to Wildwood Products, Inc., Lookout Mountain, Tenn.
Filed Nov. 9, 1972, Ser. No. 305,123
Int. Cl. B60s 9/02
U.S. Cl. 254—86 R 9 Claims



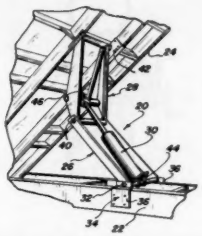
A vehicle support system for supporting the front and/or back end of travel vehicles and the like. The system includes first and second screw jack assemblies secured to the vehicle and a means to drive the jacks simultaneously with an equal torque into ground engaging position for self-leveling and lifting of the support system on any terrain. The jacks have drive shafts which drive extensible jack elements in the same direction when the drive shafts are rotated in opposite directions. A motor having an output shaft is mounted for free rotation with respect to the vehicle. The motor output shaft is coupled to one drive shaft and the motor housing is coupled to the other drive shaft.

3,784,161
WHEEL REMOVAL SAFETY DEVICE
Ralph L. Frese, 3109 Ross Rd., Palo Alto, Calif.
Filed July 8, 1971, Ser. No. 160,831
Int. Cl. E02c 3/00; B66f 7/22
U.S. Cl. 254—88 3 Claims



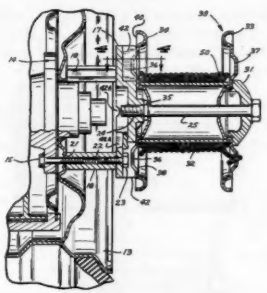
A rotating or swiveling plate is mounted on bearings above a stationary bed plate so that it may assume an acute angle with the bed plate to provide a ramp or incline for the vehicle wheel to ride upon. When the vehicle rises to a predetermined height on the ramp, gravity causes the rotating plate to assume a horizontal position where it is held by a suitable automatic positive stop, the wheel then being elevated and ready for the next step in removal.

3,784,162
SCISSOR HOIST
Glenn L. Channell, Loveland; Blaine W. Fuller, Greeley, and Kenneth R. Davisson, Severance, all of Colo., assignors to Hydraulics Unlimited Mfg. Co., Eaton, Colo.
Filed Aug. 6, 1971, Ser. No. 169,644
Int. Cl. B66f 3/00; B60p 1/04
U.S. Cl. 254—124 7 Claims



A scissor hoist for dump truck beds. The hoist is especially designed to be extremely rigid and resistant to twisting forces resulting from unbalanced loading of the tilting bed.

3,784,163
WHEEL WINCH WITH UNIVERSAL HUB
Paul A. Swanson, Excelsior, and Robert W. Wiele, Minneapolis, both of Minn., assignors to Frank D. Werner, Minneapolis, Minn.
Filed Aug. 31, 1971, Ser. No. 176,506
Int. Cl. B66d 3/00
U.S. Cl. 254—166 10 Claims

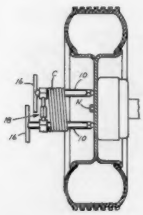


A wheel mounted winch for vehicles such as automobiles or four wheel drive vehicles utilizing a hub which permits universal mounting of the unit onto any of the standard wheel bolt patterns. The hub is made so that it may self-center through the use of the proper wheel support bolts. The winch includes a drum that is drivably mounted with respect to the hub, and which can be released from driving engagement for free wheeling to unreel the cable or rope used on the winch.

3,784,164
KNOCKDOWN WINCH ASSEMBLY FOR MOUNTING UPON A POWER DRIVEN VEHICLE WHEEL
Julius A. Blum, 5450 Vale Dr., Denver, Colo.
Filed Oct. 20, 1972, Ser. No. 299,310
Int. Cl. B66d 3/00
U.S. Cl. 254—166 4 Claims

A knockdown type winch assembly for mounting upon a power driven vehicle wheel. The assembly includes two or

more rigid rod members threaded at one end for mounting the rod members upon the vehicle wheel in place of the vehicle wheel retaining nuts or bolts. When mounted upon the wheel, the rod members project axially from the wheel at locations spaced generally symmetrically about the wheel axis. Longitudinally adjustable struts are then mounted between adjacent rod members to brace the members in their axially extending positions. When the struts and rod members are so assembled upon the wheel, the resulting assembly provides a reel structure fixed to the vehicle wheel upon which a winch cable may be wound upon driven rotation of the wheel.



3,784,165

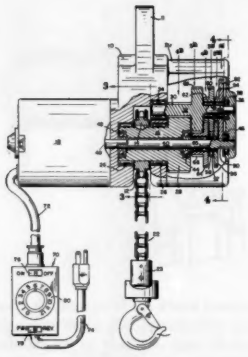
VARIABLE SPEED HOIST

Dana L. Pruitt, 209 N. Park, Martinsville, Ind.

Continuation-in-part of Ser. No. 829,503, June 2, 1969. This application Nov. 13, 1970, Ser. No. 89,170

Int. Cl. B66d *1/00*

U.S. Cl. 254—168 **4 Claims**



A hoist of light weight e.g., 10 lbs., and high capacity, e.g., 500 lbs., with infinitely variable speed and holding characteristics. A sprocket engaged with a roller chain is driven through a multiple-stage spur gear reduction train by a high-speed universal reversible electric motor energized through a modified silicon control rectifier. The reduction gears are of high tensile alloy steel, mounted on roller bearings to give an efficient drive, and the gear reduction is of such high ratio as to give the gear train a high degree of irreversibility. One-way drag braking opposes load-lowering movement of the high-speed and of the gear train, and interacts with the irreversibility to positively hold suspended loads and require the motor to drive the load down as well as up. This combines with the SCR control of the high-speed motor to give positive variable-speed lifting, lowering, and holding control of the rated load.

3,784,166

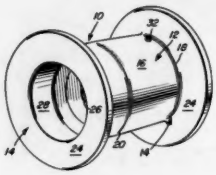
LEVEL WIND DRUM

Walter D. Renfroe, Geneva, N.Y., assignor to Terra Marine Scoop Company, Inc.

Filed Dec. 1, 1971, Ser. No. 203,778

Int. Cl. B66d *1/00*

U.S. Cl. 254—186 **6 Claims**



A drum for hoist, winches, pullers, and the like having a substantially cylindrical member provided with longitudinally spaced end portions and a winding surface having a diameter at a point at each end portion which is less than the diameter at a point substantially equidistant between the end portions for permitting a level wind action onto the drum of a line passing through a fairlead or sheave assembly.

3,784,167

GUARD-RAIL ASSEMBLY WITH PIVOTAL SUPPORT POSTS

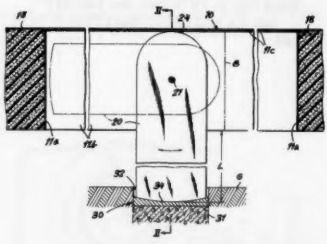
Ernest Glaesener, Dudelange, Luxembourg, assignor to ARBED-Acieries Reunies de Burbach-Eich-Dudelange, Luxembourg G.D. de Luxembourg, Luxembourg

Filed Oct. 11, 1972, Ser. No. 296,653

Claims priority, application Luxembourg, Oct. 15, 1971, 64085

Int. Cl. E01f *15/00*

U.S. Cl. 256—13.1 **7 Claims**



A guard rail formed of a downwardly open channel whose interior is filled with a bonded-in-place synthetic-resin mass is formed approximately every 10 meters with a downwardly open pocket in which the upper end of a support post is received. A pivot bolt transverse to the rail passes through the rail and the post and allows pivoting of this post relative to the rail in a horizontal plane including the rail. The lower end of the post is received in an upwardly open channel so that on collision of a vehicle with the post or a similar blow being struck to the post below the rail, this post will pivot out of its socket and up into the pocket so that the rail itself will take the blow to prevent a vehicle from flipping over the guard rail.

3,784,168

VIBRATORY DEVICE

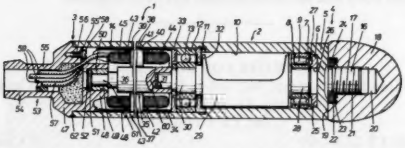
Wolfgang Schneider, Leinfelden; Gotthilf Strohbeck, Leonberg; Walter Harlin, Stuttgart; Friedrich Ruckert, Stetten, and Eugen Stahle, Magstadt, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 3, 1971, Ser. No. 204,451

Claims priority, application Germany, Dec. 9, 1970, P 20 60 538.3

Int. Cl. B01f *11/00*

U.S. Cl. 259—1 R 10 Claims



A vibratory compactor has a vibration-producing drive which is mounted in an elongated tubular housing. The housing has spaced end walls one of which is of one piece with its peripheral wall, and the peripheral wall increases in thickness towards the one end wall. A cap is provided which can be releasably connected with the one end wall.

3,784,169

METHOD OF AND APPARATUS FOR THE CONTROLLED MIXING OF TWO REACTIVE COMPONENTS

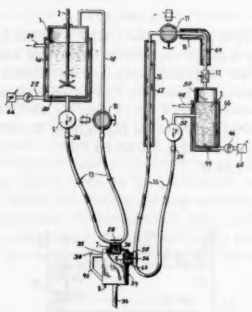
Alfred Bockmann, and Rudi Keuerleber, both of Munich, Germany, assignors to Krauss-Maffei AG, Munich, Germany

Filed Apr. 5, 1972, Ser. No. 241,122

Claims priority, application Germany, Apr. 6, 1971, 2116665

Int. Cl. B01f *5/04*, *15/02*

U.S. Cl. 259—4 15 Claims



A method of and an apparatus for the mixing of two interactive components, especially two components adapted to form a castable synthetic resin such as a caprolactam system wherein the components are to be combined in a high-volume ratio wherein the components are circulated along closed paths at superatmospheric pressures and, by pressure increases in the respective paths, are discharged through injection nozzles into a mixing chamber.

3,784,170

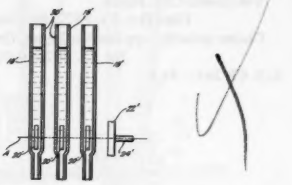
SAMPLE CELL AND STIRRER THEREFOR

Arnie J. Petersen, Newport Beach, and Jack L. Hoffa, Brea, both of Calif., assignors to Beckman Instruments Inc., Fullerton, Calif.

Filed Jan. 20, 1972, Ser. No. 219,474

Int. Cl. B01f *7/02*

U.S. Cl. 259—65 3 Claims



A sample cell for use in a spectrophotometric instrument and a stirrer for mixing sample and reagent in the cell. The cell is formed with closely spaced parallel planar sidewalls and two end walls of radiation permeable material. The cell is disposed so that the end walls lie in the optical path defined between the source of radiation and the radiation detector in the instrument. A stirring element is positioned in the cell with its magnetic axis parallel to the sidewalls of the cell. A rotatable drive magnet is positioned outside of the cell so as to rotate the stirring element about an axis perpendicular to the sidewalls so that the plane of rotation of the stirring element is parallel to the sidewalls. A plurality of such cells may be stacked in parallel relationship and a single drive magnet employed to rotate stirring magnets in the cells.

3,784,171

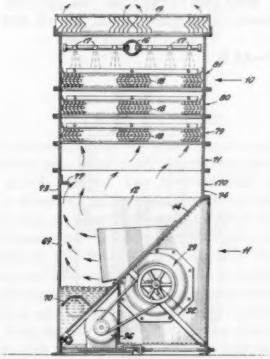
EVAPORATIVE HEAT EXCHANGE APPARATUS

John Engalitcheff, Jr., Gibson Island; Thomas F. Facius, Baltimore; Wilson E. Bradley, Jr., Ellicott City, all of Md., and Axel F. L. Anderson, Clearwater, Fla., assignors to Baltimore Aircoil Company, Inc., Baltimore, Md.

Division of Ser. No. 706,003, Feb. 16, 1968, Pat. No. 3,442,494. This application May 1, 1969, Ser. No. 820,852. The portion of the term of this patent subsequent to May 6, 1986, has been disclaimed.

Int. Cl. F28d *5/02*

U.S. Cl. 261—29 3 Claims



A blow-through evaporative heat exchange apparatus having a blower section with a wet deck section above it. The blower section has at least one slanting wall to provide space

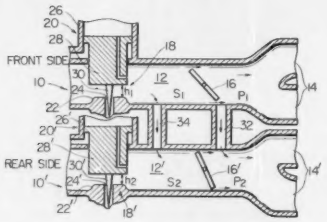
for an electric motor and blower under the slanting wall. Diffusion means are provided to ensure a uniform flow of air over the cross section of the wet deck.

3,784,172

CARBURETOR FOR INTERNAL COMBUSTION ENGINES

Takakazu Sato, and Takaya Masago, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Oct. 11, 1972, Ser. No. 296,530
Claims priority, application Japan, Oct. 19, 1971, 46-96618
Int. Cl. F02m *9/06*
U.S. Cl. 261—44 R **1 Claim**



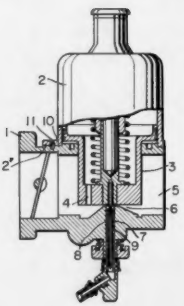
A twin carburetor of the variable-area choke type for use in multi-cylinder engine of a motor vehicle which twin carburetor includes a balance tube interconnecting a front side mixture passage and a rear side mixture passage at a point downstream of each throttle valve for balancing the pressures therein to equalize the amounts of air-fuel mixtures to be supplied to individual cylinders of the engine and an additional balance tube interconnecting the front side mixture passage and the rear side mixture passage at a point downstream of each choke for balancing the suctions or depressions acting on each air valve to provide the same effective cross-sectional area at each fuel jet for thereby producing air-fuel mixtures having equal air-fuel ratios in each mixture passage.

3,784,173

AIR VALVE TYPE CARBURETOR AND METHOD OF CONSTRUCTION

Isamu Kawai, Katsuta; Tadao Uchida, Hitachi, and Kenji Ishima, Katsuta, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed July 7, 1972, Ser. No. 269,732
Claims priority, application Japan, July 12, 1971, 46-51018
Int. Cl. F02m *9/06*
U.S. Cl. 261—44 R **6 Claims**



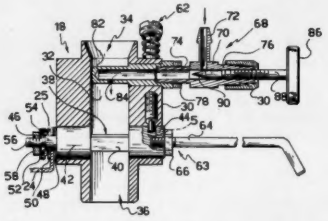
In an air valve-type carburetor in which a suction piston is mounted in a suction chamber, fixed to the main body of the carburetor, in such a manner that it will be slidingly projected from or retracted into said suction chamber under the influence of the suction pressure in the air intake passage of the carburetor, and a jet needle is fixed to said suction piston, while a fuel nozzle is provided in the main body of the carburetor, and the fuel metering area is varied by said jet needle moved into and out of said nozzle, a method of producing a positioning pin for maintaining said jet needle and said nozzle in a fixed relative position which is determined by the main body of the carburetor and the suction chamber, said method comprising boring holes through the main body of the carburetor and suction chamber in communication with each other and pouring a molten resin or the like into said holes to form a positioning pin after the relative position of said carburetor main body and suction chamber has been adjusted.

3,784,174

CARBURETOR FOR MODEL AIRCRAFT

Benjamin Tarnofsky, 942 Grow, St. Laurent, Quebec, Canada

Filed Aug. 31, 1972, Ser. No. 285,497
Int. Cl. F02m *17/34*
U.S. Cl. 261—65 **7 Claims**



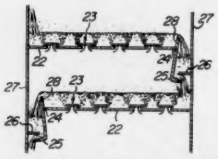
An adjustable friction clutch is provided for the lever arm of the throttle valve permitting it to override when the throttle valve reaches a limit stop thus allowing the rotary arm linking the carburetor to a remote controlled servo mechanism operating the carburetor to reach maximum travel; as a result, unnecessary battery current drain and induced load to the servo mechanism are avoided.

3,784,175

DOWNCOMER FOR FLUID CONTACTOR APPARATUS

Shoichi Hirao, Kakogawa; Satoshi Ihara, and Kanji Ueda, both of Ashiya, all of Japan, assignors to Seitetsu Kagaku Co., Ltd., Miyanishi, Harimacho, Kako-gun, Hyogo-ken, Japan

Filed Sept. 14, 1971, Ser. No. 180,378
Claims priority, application Japan, Dec. 9, 1970, 45-109766
Int. Cl. B01d *3/20*
U.S. Cl. 261—114 R **12 Claims**



A downcomer for a fluid contactor apparatus comprises a vertical passage having an opening at the upper end thereof, which consists of a movable member and a fixed member, or consists only of movable members. Said movable member is supported on the fixed member or on the other fixed parts in a manner to be tilted and an area for discharging an effluent of

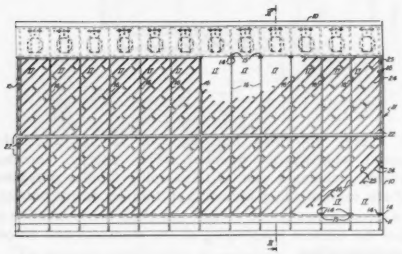
the downcomer can be automatically changed according to a fluctuation in fluid load.

3,784,176

EXPENDABLE WORK SUPPORT FOR A BURNING TABLE

Joseph J. Walters, and Verdun R. McGibbon, both of Coatesville, Pa., assignors to Lukens Steel Company, Coatesville, Pa.

Division of Ser. No. 88,876, Nov. 12, 1970, Pat. No. 3,701,514.
This application June 8, 1972, Ser. No. 260,753
Int. Cl. B23k *7/02*
U.S. Cl. 266—1 R **14 Claims**



The combination of a table for cutting steel plate and an exhaust system for evacuating the fumes and smoke produced by the cutting operation. The expendable grating of the cutting table utilizes bars which are diagonal to the usual cutting directions and are connected by staggered stiffening bars also diagonally located so that the bars are not normally cut along their longitudinal axis. Duct work under the grating comprises heavy vertically extending removable plates resting on edge which additionally provide support for the grating and lead to an elongated exhaust manifold channel having a plurality of openings and a normally closed plate covering each of such openings. The openings are disposed in a horizontal dividing plate and communicate with the space formed between each of the vertically extending plates making up the ductwork under the grating. The cover plates are hinged and raised from a horizontal position by a pneumatic cylinder actuated through a photoelectric cell which is responsive to light from plasma of the cutting torch. The photoelectric cell further actuates adjacent cover plates on either side of the cover plate which corresponds to the duct with which the photoelectric cell involved is aligned. Each hinged cover plate has a deep lip soft sealed ring which seats on the peripheral surface of the dividing plate about the corresponding opening and the arrangement is such that the fumes must make a 90° turn prior to entering the opening which slings out heavy particles which then drop to the bottom of the exhaust chamber for easy removal.

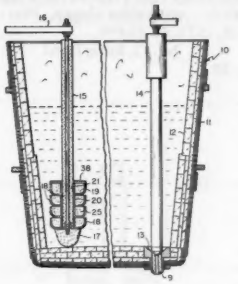
3,784,177

METHOD AND APPARATUS FOR LADLE ADDITIONS

George Rocher, Pittsburgh, Pa., and Pierre Andre Vayda, Burlington, Ontario, Canada, assignors to Metallurgical Exoproducts Corporation, McKees Rocks, Pa.

Filed July 26, 1972, Ser. No. 275,184
Int. Cl. C21c *7/04*
U.S. Cl. 266—34 T **7 Claims**

A ladle for receiving molten metal is equipped with an elongated, refractory lined rod having an enlarged bottom portion and terminating at the lower end of the ladle. A plurality of stacked container means are positioned about the rod. These container means contain the desired addition agents. The molten metal is then teemed into the ladle and the container means and addition agents are consumed thereby.

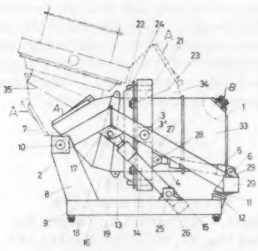


3,784,178

TILTABLE FOUNDRY CONVERTER FOR TREATMENT AND STORAGE OF MOLTEN METAL

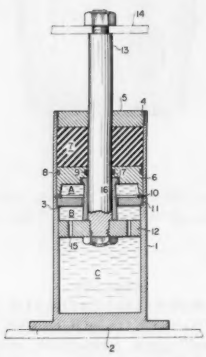
Max Wernli, Schaffhausen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Apr. 26, 1972, Ser. No. 247,741
Claims priority, application Switzerland, Apr. 29, 1971, 6304/71
Int. Cl. C21b *7/14*
U.S. Cl. 266—38 **9 Claims**



A generally cylindrical foundry converter, located normally about a horizontal axis, is pivotally secured to a pair of arms at intermediate points thereof. The forward ends of the arms pivot about a support, the rearward ends of the arms are abutted against the support, but free to be lifted therefrom. A first power lift means is connected between the converter vessel and the arms to effect tilting movement of the converter vessel with the arms stationary, to place the converter in a vertical position for treatment of metal contained therein with additives; a second power lift means is connected between the arms and the base support to lift and tilt the entire converter vessel together with the arms forwardly, so that molten metal in the converter can be poured out of the mouth opening thereof, the entire assembly being compact and permitting pouring of molten metal from essentially a single outlet location without change thereof as the converter continues to be tilted.

3,784,179
CUSHIONING DEVICE
Toshihiro Sugiura, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan
Filed May 11, 1972, Ser. No. 252,251
Claims priority, application Japan, May 14, 1971, 46-39278; June 25, 1971, 46-55499
Int. Cl. B60g 11/62
U.S. Cl. 267—35 5 Claims

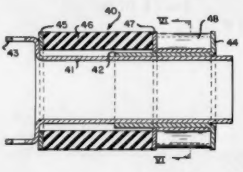


A cushioning device including a closed cylindrical chamber, floating piston means within the chamber to divide the same into first and second axially arranged chamber sections, liquid filling the first chamber section and a compressible solid, such as silicone rubber, filling the second chamber section, a piston rod entering from outside the chamber and extending through the second chamber section and into the first chamber section, and a piston head on the inner end of the piston having axial orifice means therein, whereby the energy of buff forces applied to the piston rod is dissipated as a result of both a throttling effect produced by the liquid and a volume-pressure change undergone by the compressible solid.

3,784,180
STABILIZER BAR LINK
Alvin G. Massinger, 426 Church Ln., Yeadon, Pa.
Filed May 17, 1972, Ser. No. 254,187
Int. Cl. B60q 25/00
U.S. Cl. 267—66 3 Claims

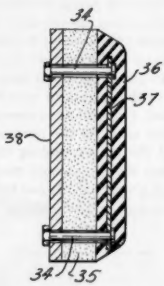
A stabilizer bar link device for vehicles such as trucks, buses, and automobiles. This device consists primarily of a structure of which the rubber bushings are replaceable on the stud portion of the device.

3,784,181
ENERGY ABSORBING BUCKLING BOX
John E. Nemec, Tallmadge, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio
Filed May 5, 1972, Ser. No. 250,765
Int. Cl. F16f 7/12
U.S. Cl. 267—140 12 Claims



An energy absorbing buckling box having a tubular polygonal elastomeric member. The energy absorber preferably includes a pair of telescoping tubular polygonal members, each of which include a restraining means between which means is positioned at least one elastomeric member to control the relative telescoping of the members and absorb energy by buckling.

3,784,182
DEFORMABLE SHOCK ABSORBING GUARD
Leonard H. Sobel, Rockaway Park, N.Y., assignor to Collision Devices, Inc., Rockaway Park, N.Y.
Continuation-in-part of Ser. No. 792,737, Jan. 21, 1969. This application Oct. 1, 1971, Ser. No. 185,633
Int. Cl. F16f 7/02
U.S. Cl. 267—140 19 Claims



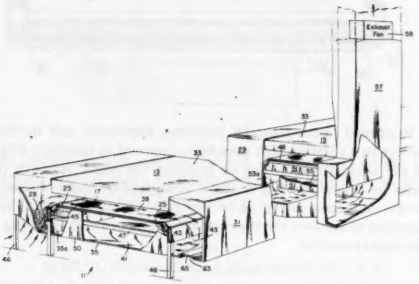
Energy absorbing crash or collision devices for vehicles or the like to reduce shock of collision by utilizing energy absorbing components which are flexible and compressible and/or rigid and crushable, which components may used singly or in combination, which may be used with single or multiple pressure plates, to effect gradual deceleration upon collision.

3,784,183

HOLDING AND SMOKE REMOVAL SYSTEM FOR A LASER CUTTER

Rodolfo Castro, La Palma; Esteban J. Toscano, Oceanside, and Felix Jerome Viosca, Canoga Park, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Sept. 27, 1971, Ser. No. 184,139
Int. Cl. B23q 3/00; B23k 27/00
U.S. Cl. 269—20 6 Claims



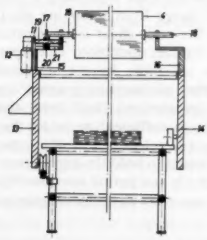
To remove combustion by-products and to secure fabric being cut, the cutting area of a laser fabric cutter is enclosed in a hood through which air flows in a stream, first over and then under the enclosed air-permeable cutting surface on which the cloth is supported.

3,784,184

CLOTH FOLDING MACHINE HAVING MEANS FOR CONTROL OF THE EDGES OF CLOTH UNWOUND FROM A ROLL

Gunter Stumpf, Mehrstetten/Kreis Munsingen, Germany

Filed June 9, 1971, Ser. No. 151,433
Claims priority, application Germany, Aug. 5, 1970, P 20 39 009.4
Int. Cl. B65h 29/46
U.S. Cl. 270—31 1 Claim



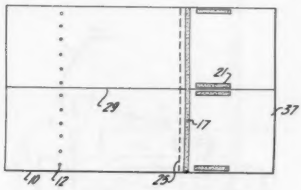
Material is unwound from a roll and deposited in layers by a reciprocating carriage supporting the roll. The roll is mounted on a rod supported in two carriers attached to the carriage and the rod is transversely displaced to maintain the edges of the unwound material in predetermined locations. The carriage carries a motor which drives a threaded spindle to impart transverse movement to the rod, the supports for the rod being secured to the carriage either fixedly or pivotably.

3,784,185

CROSS FOLDED ENVELOPE PAMPHLET

Robert E. Katz, Livingston, N.J., assignor to Webcraft Packaging, Inc., North Brunswick, N.J.

Filed Mar. 17, 1971, Ser. No. 125,213
Int. Cl. A22c 11/08
U.S. Cl. 270—37 7 Claims



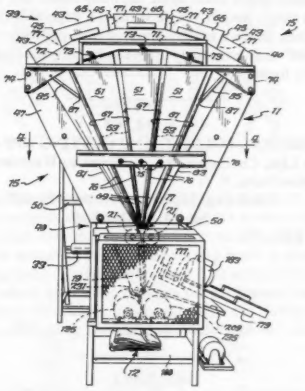
Pairs of envelopes formed by stitch glue and remoist glue applied in transverse lines to web, the web is split longitudinally, ribbons folded transversely to superimpose and crease, the crease is cut off to separate pages, folded again to form book, which is cut off transversely.

3,784,186

METHOD OF AND APPARATUS FOR MAKING PLEATED AND FOLDED ARTICLES FROM A WEB

Robert Lenthall, Don Mills, Ontario, Canada, and Charles A. Lee, Knoxville, Tenn., assignors to International Paper Company, New York, N.Y.

Filed June 24, 1971, Ser. No. 156,184
Int. Cl. B65h 45/16
U.S. Cl. 270—64 6 Claims



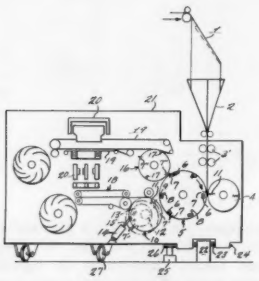
An elongated continuously traveling web is longitudinally pleated, transversely folded and subsequently severed to provide pleated and folded articles therefrom. The traveling web is first bowed into a substantially concave transverse cross section and then is pleated by forcing portions of the web to move outwardly in a direction normal to the direction of web travel. The pleats are formed along lines extending radially from the bowed cross section and the pleats converge at a focal point at which the pleats are forced together to form a longitudinally pleated web. Next, the pleated web is transversely folded in a zigzag manner and is severed to form a longitudinally pleated and transversely folded article.

3,784,187

FOLDING APPARATUS

Shigenao Takayanagi, Mihara City, and Toyoo Nimoda, Fukuyama City, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1970, Ser. No. 102,341
Claims priority, application Japan, Jan. 14, 1970, 45/3539
Int. Cl. B65h 45/09
U.S. Cl. 270—64 2 Claims



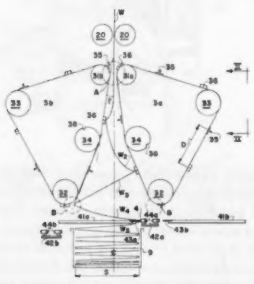
A web transferring, cutting and folding apparatus shiftable between two modes of operation for producing from a continuous web, either two streams of eight page sections or one stream of 16 page sections. In the first mode, two triangular formers double and redouble the web about its longitudinal axis. Then it is cut into single width, double length and finally single width, single length eight page sections which are alternately forwarded to separate streams. In the second mode, one triangular former doubles the web about its longitudinal axis. Then it is cut into double length, double width sections which are next folded into single length double width sections transversally and forwarded in one stream to a right angle folding unit which folds these sections about the longitudinal axis into single length, single width 16 page sections. In shifting between the two modes, most of the apparatus is relatively rotated 90° to alternatively utilize or by pass the one of the two triangular formers.

3,784,188

ACCORDION, FOLDING AND CUTTING APPARATUS

John De Ligt, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Aug. 31, 1971, Ser. No. 176,487
Int. Cl. B65h 45/20
U.S. Cl. 270—79 6 Claims



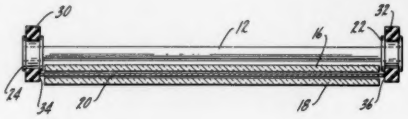
Apparatus for forming accordion folds in a longitudinally traveling web of substantially uniform width and indefinite length including web cutting means disposed upstream or downstream of said folding apparatus.

3,784,189

PAPER EDGE TRANSPORT SYSTEM

John A. Thiel, Wheeling, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Mar. 30, 1972, Ser. No. 239,476
Int. Cl. B65h 5/02
U.S. Cl. 271—45 8 Claims



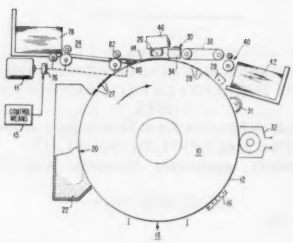
Improved sheet material handling apparatus and method having two rotating belt members disposed at opposite edges of the sheet for engaging or gripping the sheet between the belts by application of a slight compressive force. Pressure means such as a pair of plates are disposed adjacent the sheet material to confine the sheet material and prevent buckling of the sheet material.

3,784,190

SHEET REMOVING APPARATUS

Roy P. Crawford, Saratoga, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,359
Int. Cl. B65h 5/06
U.S. Cl. 271—80 9 Claims



Apparatus is provided for separating a copy sheet bearing an unfused toner image from a moving electrophotographic surface to which the copy sheet is electrostatically attracted during the image transfer operation. The separating apparatus utilizes a nozzle assembly having a plurality of nozzles mounted near the electrophotographic surface. A high velocity flow of pressurized fluid from the nozzles for a predetermined time is sufficient to detact the leading edge of the sheet and a lower velocity flow of pressurized fluid from the nozzles is sufficient to hold the copy sheet closely adjacent to the nozzle assembly and permit movement of the copy sheet across the nozzle assembly to a sheet transport toward a fusing station.

3,784,191

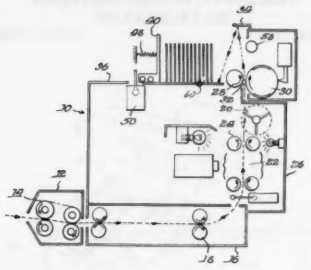
CONVERTIBLE POWER STACKER

John A. Thiel, Wheeling, Ill., assignor to Bell and Howell Company, Chicago, Ill.

Filed Mar. 16, 1972, Ser. No. 235,141
Int. Cl. B65h 29/22, 31/06
U.S. Cl. 271—80 5 Claims

A document stacker at the exit of a processing device for business or other forms which accommodates automatic

sequential vertical stacking of the forms, and is readily convertible to conventionally and horizontally stack larger size documents. Power stacking means are provided during the vertical stacker mode of operation of the invention to drive the lower edge of each form into the stack.

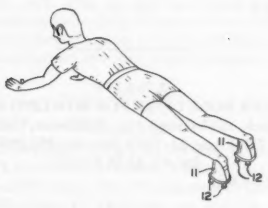


3,784,192

WHEEL SUPPORTED EXERCISING DEVICE

Donald J. Nutter, Norton, Ohio, assignor to Gordon B. Seward, Akron, Ohio; a part interest

Filed Oct. 27, 1972, Ser. No. 301,598
Int. Cl. A63b 23/04
U.S. Cl. 272—57 J 9 Claims



The device supports the user's feet and ankles when the user is in the prone position. The device is structured to move across a flat surface on wheels. The upper portion is shaped to receive the ankle, instep and foot of the user, with a retainer to hold the foot in place. The wheels are preferably caster wheels to provide for movement in any direction. In use, the device is a means for body-building, exercise, or play.

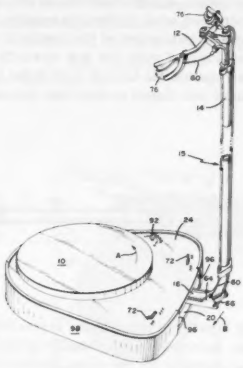
3,784,193

FRICTION TYPE EXERCISING DEVICE WITH SEPARATE HANDGRIP EXERCISER

Luther G. Simjian, 7 Laurel Ln., Greenwich, Conn.

Filed July 21, 1972, Ser. No. 273,467
Int. Cl. A63b 23/00, 21/22, 21/00
U.S. Cl. 272—68 20 Claims

An exercise apparatus includes a platform adapted to be mounted by a person and rotate responsove to a twisting motion executed by such person. An arm extends generally upward relative to the platform and is disposed for being grasped by the person on the platform. The platform and the arm undergo coordinated counterrotating motion in response to the twisting motion, thus providing muscle toning and exercise to a user. A latching device is provided to latch the platform after it has reached its limit of rotational excursion and to unlatch it in response to a manually supplied force whereby to obtain additional exercise for hand and arm muscles. A valve is provided to control the amount of fluid passing from a resilient fluid type hand exerciser on the arm. The apparatus has a structure for limiting the rotation of the arm and the platform. The resilient hand exerciser may have a spring substituted for the resilient fluid type hand exerciser, to require the user to exert a larger twisting force to rotate the platform against a friction brake.

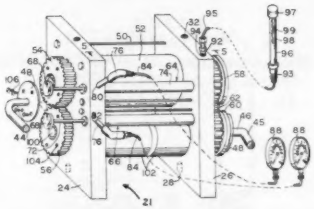


3,784,194

BILATERAL RECIPROCAL ISOKINETIC EXERCISER

James J. Perrine, 8973 Kobe Pl., San Diego, Calif.

Filed Apr. 20, 1972, Ser. No. 245,742
Int. Cl. A63b 23/04, 21/00
U.S. Cl. 272—79 C 12 Claims



An Isokinetic Exerciser for exercising the limbs of a person bilaterally reciprocally includes an actuator means with simultaneous reciprocal force receiving input members on opposite ends of the actuator. A limb supporting lever is attached to each of the force receiving members. The actuator is coupled to a valve which adjustably controls the limit speed of rotation of the levers effectively independent of the forces applied thereto by controlling the flow of fluid through the valve.

3,784,195

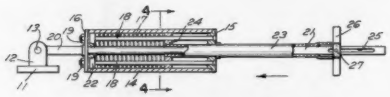
PUSH PULL EXERCISER WITH SPRING RESISTANCE

James E. Johnson, 917 Major Potter Rd., East Greenwich, R.I.

Filed Nov. 15, 1972, Ser. No. 306,537
Int. Cl. A63b 21/04
U.S. Cl. 272—83 R 10 Claims

An excercise device comprising a hollow cylinder having a heavy coil spring loosely positioned therein. A rod passes through the center of the spring to the bottom of the cylinder. A cross bar is mounted on the bottom of the rod and engages the bottom end of the spring. A hollow rod is telescopically slidable at the upper end of the rod. A cross bar is mounted at the bottom end of the hollow rod and engages the top end of the spring. Above the hollow rod, the rod is provided with a vertical slot. A transverse handle is provided with a pin ex-

tending through the slot to permit vertical sliding movement of the handle along the rod. On downward movement, the handle engages the top of the hollow rod and pushes the rod and its cross bar down against the top of the spring. This movement can continue until the handle reaches the bottom of the slot. On upward movement of the handle, it engages the upper end of the slot and pulls the rod upwardly so that its cross bar is pulled against the bottom end of the spring. Both ends of the cylinder are closed to limit the movement of the spring.



Now, when the bottom of the cylinder is pivotally mounted on a floor or base, movement of the handle up and down provides an excellent exercise for the arms, shoulders and back. To heighten the effect, a small platform may be mounted on springs in front of the device. The person stands on the platform and operates the cylinder to provide the body with a sway effect. The platform and cylinder can be mounted on a short board for easier handling and storage.

3,784,196

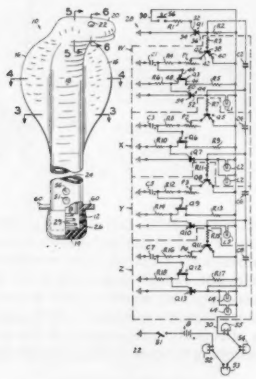
BALANCING SKILL GAME

Evan H. Berlin, 119 Dunn Ave., Lake City, Pa.

Filed July 24, 1972, Ser. No. 274,707

Int. Cl. A61b *5/16*; **A63f** *9/06*

U.S. Cl. 273—1 E **7 Claims**



An elongated substantially cylindrical toy simulating the head end portion of a snake including a throat portion, flanges, and head having a base member opposite the head is adapted to be balanced in an upright position in the palm of a player's hand. An electrical circuit, including lamps selectively located in the toy and a time delay circuit for each lamp, a source of electrical energy and manually operated switches adjacent the base, is contained by the toy which selectively energizes the lamps in a predetermined sequence while the toy remains balanced. A plurality of mercury switches are located in the body and are connected in series between the source of electrical energy and lamps. If the toy is caused to tilt beyond a certain point the mercury switches open and deactivate the time delay circuits and lamps.

3,784,197

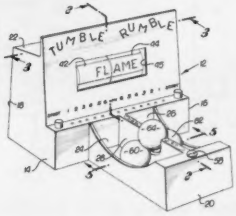
REACTION GAME WITH SCRAMBLING OF INDICIA

Alfred G. Massicotte, 4752 Green Ave., Los Alamitos, Calif.

Filed June 14, 1971, Ser. No. 152,885

Int. Cl. A61b *5/16*

U.S. Cl. 273—1 E **10 Claims**



A mechanical device that, when actuated, will randomly rotate hoops loosely carried by an axle so as to scramble indicia carried on the exterior of the hoops relative to each other.

An indicating apparatus, which can be used with the indicia scrambler, includes a movable indicator member supported by two changeable-position reaction members, either of which, when moved, can cause the indicator member to move to associate with it.

3,784,198

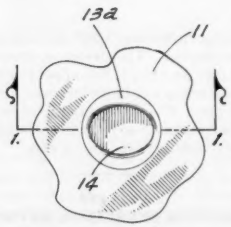
FINGER HOLE LINER FOR BOWLING BALL

Burton E. Bach, 1661 Grand Ave., Bellflower, Calif.

Filed Aug. 21, 1972, Ser. No. 282,890

Int. Cl. A63b *37/00*

U.S. Cl. 273—63 A **4 Claims**



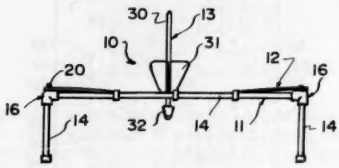
A pliable plastic liner for a finger hole in a bowling ball is described. The liner is comprised of a rubber-like material, having a Shore hardness of, for example, 65 and is formed into a tube-like member having a wall thickness of about one-eighth of an inch. Circumferentially disposed around the outside of the tube-like member is a key-like ridge that is shaped to lock into a keyway or circumferential groove formed within the finger hole of the bowling ball. To provide an elongated or elliptical hole if the bowler prefers to grip the ball with his fingertips, the liner is formed with a circular hole and the outside wall of the tube-like member has an elliptical cross-section. Then when the liner, being pliable, is inserted within the inherently round finger hole of the bowling ball, the opening in the liner becomes elliptical thereby increasing the bowler's control.

3,784,199

MESH TARGET AND DART CAPTURABLE THEREIN

John F. Chmela, 7256 W. Davis St., Morton Grove, Ill.

Filed May 10, 1971, Ser. No. 141,658
Int. Cl. A63b 71/02
U.S. Cl. 273—95 R 6 Claims



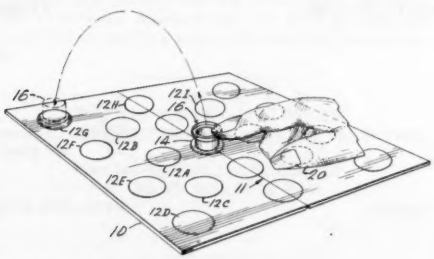
A dart game which comprises a target in the form of a net which is affixed to a frame which has legs so that the net is supported a spaced distance above a surface upon which the frame is placed. The darts used with the game preferably and advantageously are molded as integral units of plastic, and comprise a shaft having a plurality of fins affixed thereon to guide the flight of the dart and a tip portion on the end of the shaft which is correspondingly sized with the net to engage the net to resist removal of the dart after the tip has once penetrated the net. This tip also preferably has a weight disposed therein and a resilient bumper on its end. The latter and the target permits the game to be played indoors, with the resilient bumper further providing a safety feature.

3,784,200

PROJECTILE INCLUDING A CYLINDRICAL BODY WITH ONE FLANGED END AND A TARGET BOARD

Robert William Hotchkiss, 8861 W. Albain Rd., Ida, Mich.

Filed Mar. 15, 1973, Ser. No. 341,570
Int. Cl. A63b 71/00
U.S. Cl. 273—95 R 1 Claim



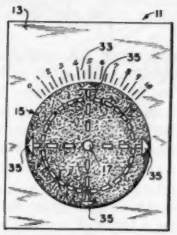
A multiplayer game for several persons which is comprised of and based around a square playing board which has on its upper playing and planar surface a plurality of circular target areas randomly distributed thereon and a centrally elevated launch area from and upon which a hollow cylindrical member, enclosed at one end, is propelled in a vertical path from a position with the open end upwards by a flip of a player's finger in order to cause the cylindrical member to land on one of the target circles in a position with its closed portion upright.

3,784,201

ROTATABLY SCORING DART BOARD

Dennis G. Wyman, Owings Mills; William J. Bichell, Phoenix, and Humber Oliveri, Randallstown, all of Md., assignors to Granta Corporation, Baltimore, Md.

Filed Jan. 12, 1972, Ser. No. 217,311
Int. Cl. A63b 71/02
U.S. Cl. 273—102.1 E 6 Claims



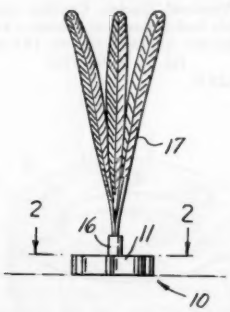
A dart game comprising a stand-up or hanging board having a target supported thereon for rotation about a generally horizontal axis. A plurality of darts are provided and, when thrown, the darts attach to the target. Each attaching dart tends to turn the target about its rotational axis by an amount which is a function of the radial and angular position of the dart on the target, and its relation to other darts attached thereto. Scoring means responsive to angular and/or directional target movement is provided.

3,784,202

SHUTTLECOCK

Raymond M. Pon, 71 Blake St., San Francisco, Calif.

Filed June 19, 1972, Ser. No. 264,183
Int. Cl. A63b 67/18
U.S. Cl. 273—106 A 1 Claim

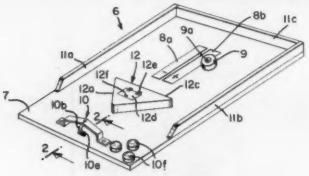


A shuttlecock for sports use in which the shuttlecock is kicked about a playing surface and into the air. The shuttlecock includes a soft plastic body of a substantially flat generally circular shape and having an axial socket for holding guiding feathers. The plastic body is generally in the form of a disk and in one form of the invention is hollow. In a second form of the invention the hollow cavity of the body has weights positioned therein. In a third form of the invention the body is solid and has vertical bores extending therethrough.

3,784,203
LIGHT-ON TARGET GAME

Albert Nathanson, 75-60 199th St., Flushing, N.Y.

Filed Feb. 5, 1973, Ser. No. 329,372
Int. Cl. A63f 3/00
U.S. Cl. 273—126 A 9 Claims

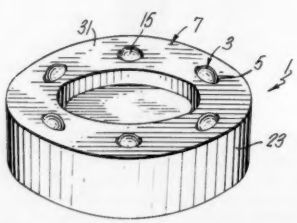


In a preferred embodiment of the invention, the game includes a playing board having an upper flat face about rectangular in shape having a fence of resilient plastic circumscribing continuously at least about three sides with two separate closely spaced-apart electrified plates about centrally spaced intermediately between two of the opposite fenced sides and having also about intermediately spaced between the two oppositely spaced fenced sides a barrier structure nearer the remaining end and at a point adjacent the remaining end a sliding-missile propelling-device for propelling a slidable missile along the flat playing board face on one or the other side of the barrier structure reboundingly against the resilient fence, the missile being typically a disk in shape, and a light-bulb-carrying slidable disk which when struck by a rebounding missile-disk becomes purposely slid toward a straddling position whereby one electrical contact of the lightbulb is in contact with one of the electrified plates while another of the oppositely charged plates is in contact with the reamining electrical terminal of the lightbulb resulting in the lightbulb becoming illuminated thereby, the propelling device preferably including an elastic strip extending vertically anchored at each of opposite ends thereof.

3,784,204
HOCKEY PUCK

Julius Felber, Montreal, Quebec, Canada, assignor to Julius Felber and Bela Szabo, Montreal, Quebec, Canada

Filed Nov. 10, 1971, Ser. No. 197,264
Int. Cl. A63b 71/00
U.S. Cl. 273—128 R 8 Claims

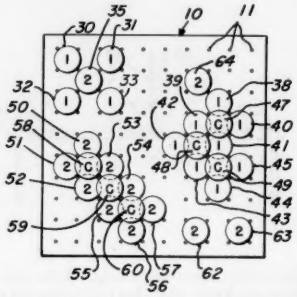


An improved hockey puck having spherical rollers mounted and retained in depressions formed on each face of the puck during the molding of the puck. The depressions on one face are laterally offset with respect to the depressions on the other face so as to obtain accurately dimensioned depressions after the molding operation.

3,784,205
BOARD GAME APPARATUS

Norton M. Cross, Jr., White Bear Lake, Minn., assignor to Reynolds W. Guyer, Jr., St. Paul, Minn.

Continuation of Ser. No. 119,673, March 1, 1971. This application Sept. 5, 1972, Ser. No. 286,057
Int. Cl. A63f 3/00
U.S. Cl. 273—131 AC 9 Claims

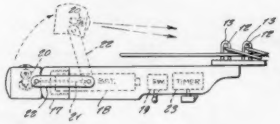


A game including a game board having a plurality of recesses preferably defined by upstanding pegs and a plurality of spherical playing pieces which are of a diameter such that they can be placed in adjacent recesses in diagonal rows but not in adjacent recesses in orthogonal rows. The purpose of the game is to form all of the playing pieces into squares with the playing pieces in the diagonal corners of the square, these squares being designated as crown squares. An alternative way of winning is to capture all but a designated number of the opponent's spherical playing pieces by enclosing them in capture squares. Capture squares are squares in which the playing pieces are arranged in alternate squares along orthogonal rows so that a captured piece will fit between the four playing pieces of the square.

3,784,206
CHINESE RING PUZZLE

Willard L. Sluss, 7616 Brush Lake Rd., North Lewisburg, Ohio

Filed Mar. 20, 1973, Ser. No. 342,951
Int. Cl. A63f 9/08
U.S. Cl. 273—158 1 Claim

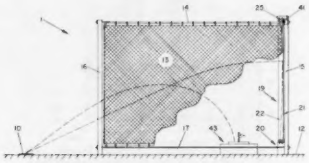


A Chinese ring puzzle consisting of a series of rings, each one of which is fitted through an eyelet secured in a bottom plate, an elongated loop trapping all the eyelets with the rings on top and the plate on the other side; the loop being able to be extracted by skilful maneuvering of the rings; the puzzle being integral with a handle carrying a pen-lite battery, switch and lamp for illumination so the puzzle can be played after dark at night, and the handle also supporting a timer so to indicate the length of time competitive players take to solve the puzzle. The timer can be so arranged in the lamp circuit as to actuate the lamp when the timer is set and deactuate the lamp at the termination of the time interval set on the timer.

3,784,207
GOLF GAME

Joseph A. Gentiluomo, 1456 Belmont Ave., Schenectady, N.Y.

Filed Dec. 6, 1971, Ser. No. 204,890
Int. Cl. A63b *67/02, 69/36*
U.S. Cl. 273—176 A **17 Claims**

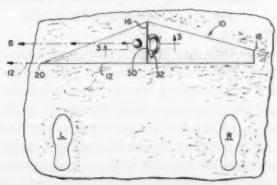


Golfing lanes constructed and equipped for the playing of a golf game which lends itself to a handicap system whereby players of varying abilities can compete on a handicap adjusted scoring basis. Each lane has a golf tee disposed at one end, an upright target disposed at the opposite end for segregating balls on a directional accuracy basis, a ball receiver for receiving and classifying balls gravitating from the upright target, and ball confining members disposed with respect to the golfing lanes for preventing ball cross-fire into adjacent targets. The upright target has ball-to-target impact sensing devices functionally associated with control apparatus for providing ball momentum classification. Since the mass of a golf ball is constant, ball momentum is representative of ball velocity or the time required for the ball to travel the fixed distance between the tee and target. The apparatus for determining ball momentum may include such components as an acoustic sensing unit, one or more inertia switches, a time sequence programmer, an operatively associated pulser, relays and a counter. Scoring of each ball hit is provided by combining numerical representations of a directional accuracy factor and a ball momentum factor. For playing the game, each player hits a predetermined number of balls with both wood and iron clubs in a prearranged sequence into the vertical target. This game can be extended to include also floor targets which can be disposed forward of each vertical target. For scoring purposes, these floor targets with associated controls have apparatus for classifying and providing a numerical representation of all balls hit therein with short range irons. Game scoring is devised to place a premium on directional accuracy with the ball momentum factor associated with balls hit to said vertical target included merely to more thoroughly scruntinize each golf shot and add a challenging distinctive quality to the game. Scores of each shot taken are displayed on a counter situated on a score table located at each golf tee area.

3,784,208
GOLF SWING IMPROVING DEVICE

Maurice E. Weygandt, 5396-4th St. North, Apt. 102, St. Petersburg, Fla.

Filed Jan. 23, 1973, Ser. No. 326,075
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 A **3 Claims**



A pliant shape-holding mat having generally the shape of an elongated isosceles triangle for use by golfers. Indicia defining a straight line is provided to denote the relatively short height of the mat and a golf tee receiving opening is provided about midway of the line and about 1 inch normally offset therefrom.

3,784,209
GOLF BALL

Aaron Robert Berman, deceased, late of Hatfield, Pa., and Katharine D. Berman, administratrix, Valley View Apartments C-605, King of Prussia, Pa.

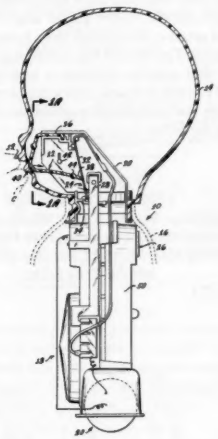
Filed June 7, 1971, Ser. No. 150,722
Int. Cl. A63b *37/00, 37/12*
U.S. Cl. 273—218 **1 Claim**

One-piece, nonhomogeneous, molded golf ball is obtained by forming a center of an uncured elastomeric material, surrounding the center with a compatible but different uncured elastomeric material, and curing both elastomeric materials, such that when said materials are cured they become integral with each other to form an one-piece molded golf ball which is harder at its center than at its outer surface.

3,784,210
KISSING DOLL PHONOGRAPH

James H. Fox, Torrance; Han-Chung Leung, Los Angeles, and Howard R. Stern, Anaheim, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 16, 1971, Ser. No. 208,625
Int. Cl. G11b *25/04, 17/06;* **A63h** *3/33*
U.S. Cl. 274—1 A **4 Claims**



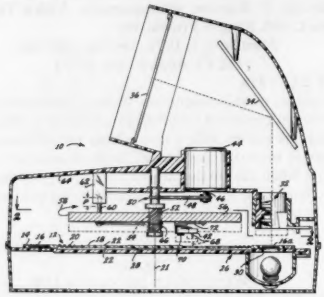
A doll with a phonograph that plays each time the lip portion is depressed, the doll being constructed to enable large dimensional tolerances in the location of the switch that is operated by depressing the lips, and the phonograph being constructed to sequentially play different recordings. An electrical switch that turns on the phonograph when the lips are depressed, includes a relaxation member extending from the lips to a switch contact to push the contact against another contact when the lips are depressed, the relaxation member constructed of an ordinary plastic that quickly loses its resilient resistance to deflection. The phonograph includes a cam for returning the tone arm to the outside of the record, and a stop pivotally mounted on the cam for positively engaging a catch on the turntable to rotate the cam with the turntable after each record groove is played.

3,784,211

PHONOGRAPH FOR PLAYING STATIONARY RECORD

William F. Summerfield, Huntington Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed May 30, 1972, Ser. No. 257,508
Int. Cl. G11b 17/06
U.S. Cl. 274—9 R 5 Claims



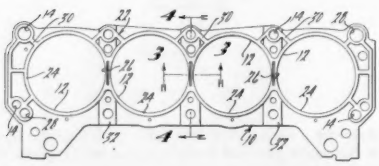
A phonograph which plays a selected one of several spiral grooves on a stationary record, including a drive shaft with a high helix angle thread which engages a tone arm carrier, so that when the drive shaft begins rotating, the carrier is urged to rotate and is also urged to move axially down towards the record. A stop on the phonograph housing prevents rotation of the carrier past the stop until the carrier has moved sufficiently towards the record for a tone arm on the carrier to engage a record groove, the carrier then lying below the stop so it can be rotated. The record has a peripheral portion containing pictures that can be viewed, a hub portion containing several spiral record grooves, and a resilient portion connecting the hub to the peripheral portion to allow up and down movement of the hub.

3,784,212

COMPOSITE GASKET

Ralph G. Doerfling, Walled Lake, Mich., assignor to Detroit Gasket Manufacturing Company, Oak Park, Mich.

Filed May 22, 1972, Ser. No. 255,812
Int. Cl. F16j 15/12
U.S. Cl. 277—22 7 Claims



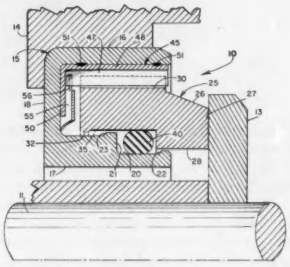
A composite gasket suitable for use as a cylinder head gasket for internal combustion engines or the like. The gasket comprises a deformable base sheet having a plurality of openings therein, the edges of which are reinforced by overlying metal grommets. Heat-conductive strips overlie the face surfaces of the base sheet and are disposed in heat conductive contact with the reinforcing grommets and are effective to rapidly conduct heat away from localized hot-spots to areas of cooler temperature, thereby substantially prolonging the useful operating life of the gasket.

3,784,213

ROTARY FACE SEAL ASSEMBLY

Robert M. Voitik, Glenview, Ill., assignor to Innovatex Corporation, Glenview, Ill.

Filed June 20, 1972, Ser. No. 264,446
Int. Cl. F16j 15/40, 15/54
U.S. Cl. 277—40 10 Claims



A face seal assembly for cooperation with a mating ring to provide a rotary face seal, the assembly including a stressed resilient sealing ring which provides a secondary seal and, in addition, cooperates with other structure for maintaining the parts in assembled relation during storage and handling. The assembly also includes a pair of secured anti-rotation members for a seal nose member each having a retaining tab serving to hold in the assembly the anti-rotation member in the event it becomes unsecured. A biasing annular wave spring of generous size permits yieldable axial movement of the nose member. The aforesaid secured anti-rotation members are received in diametrically opposed peripheral slots in both the nose member and biasing spring, the respective slots in the nose member and spring being aligned, the retaining tabs of the anti-rotation members lying on the side of the spring opposite the nose member. The slots in the wave spring are located midway between adjacent peaks and valleys of the spring so the retaining tabs which are aligned therewith serve as rigid stops preventing permanent deformation of the spring due to axial thrust of the nose member. The design of the parts of the assembly is such that the structural features responsible for the various functions are accommodated for the most part within an axial length of the nose member which has uniform cross-sectional size and shape, thereby providing a nose member of desirable size possessing high structural integrity.

3,784,214

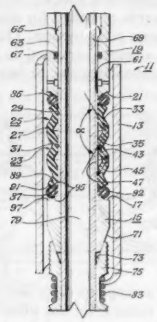
SEAL THAT IS RESPONSIVE TO EITHER MECHANICAL OR PRESSURE FORCE

Jack W. Tamplen, Rural Rt. No. 2, Celina, Tex.

Filed Oct. 18, 1971, Ser. No. 190,086
Int. Cl. F16j 5/00; F16l 21/04
U.S. Cl. 277—116.8 10 Claims

A sealing device for sealing between two concentrically disposed surfaces characterized by longitudinally movable shoulders for compressing the seal and a tubular, laterally expansible seal for effecting a seal intermediate the two surfaces in response to longitudinal compression by the shoulders; the seal being characterized by at least one annular ridge having an outer portion connected with two inner portions by two respective side walls, the side walls defining in cross section an angle α therebetween that is less than 90° in the set condition. Having an angle less than 90° in the set condition enables a relatively large compressive force to be generated in effecting

a seal by engagement of the outer portion with the outer sealing surface. After setting, the seal is responsive to either



mechanical force or pressure force in retaining its seal. Also disclosed are specific structural embodiments.

3,784,215

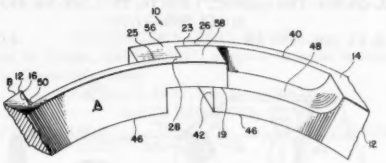
INTERLOCKING JOINT FOR SEALING RINGS

Meyer L. Ruthenberg, Owings Mills, Md., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Nov. 12, 1971, Ser. No. 198,245

Int. Cl. F16j *9/24*; F16r *1/22*

U.S. Cl. 277—220 **2 Claims**



An interlocking joint assembly for annular split sealing rings where overlapping end sections form both radial and axial sealing faces; the end sections are formed with axially opposed overlapping segments creating a pair of axially overlapping radial sealing interfaces at the opposed ends of the sealing ring and a pair of axially offset axial sealing interfaces extending radially from the midportion of the ring to the outer radial face of the ring.

3,784,216

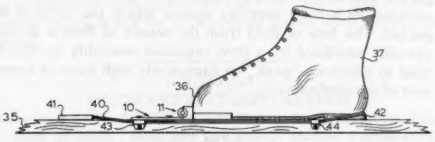
RELEASABLE SKI BINDING

Roe J. Maier, Jr., Rt. 1, Box 704A, Albuquerque, N. Mex.

Filed Mar. 2, 1972, Ser. No. 231,211

Int. Cl. A63c *9/08*

U.S. Cl. 280—11.35 D **9 Claims**



A binding to releasably attach a boot to a ski which facilitates release of the boot with the heel of the boot fastened to the ski or with the heel of the boot free to rotate above the ski about the toe of the boot above the ski. The binding includes a pin assembly mountable to the ski and a socket assembly which rotatably and releasably engages the pin assembly and which receives and carries the toe of the boot. In operation, the boot is biased into the socket assembly and when a force is applied to the boot overcoming the bias, the boot is released from the ski to prevent injury to the skier.

3,784,217

ICE SKATES

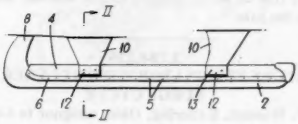
John Staples, Slough, England, assignor to Mitchel & King Skates Limited, Slough, England

Filed Apr. 21, 1972, Ser. No. 246,437

Claims priority, application Great Britain, Apr. 26, 1971, 11438/71

Int. Cl. A63c *1/38*

U.S. Cl. 280—11.17 **3 Claims**



In an ice-skate of the kind having a longitudinally-extending tubular reinforcing member for the blade and a pair of cup-shaped support members extending from the tube to a bed-plate and a sole-plate for a skate boot, the lower ends of the cup shaped members are formed with flanges having a semi-cylindrical cross-section so that they wrap completely around the tubular member, up to the blade.

3,784,218

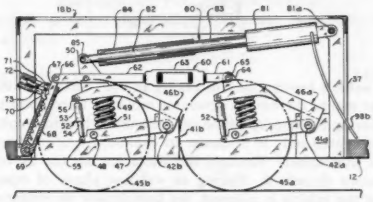
VEHICLE TRAILER

Edwin A. Stone, 1433 Wescott Rd. No. 7, Colusa, Calif.

Continuation-in-part of Ser. No. 715,696, March 25, 1968, Pat. No. 3,574,388. This application Apr. 12, 1971, Ser. No. 133,104

Int. Cl. B62d *21/18*

U.S. Cl. 280—43.23 **8 Claims**



A trailer vehicle having frame pivotally mounted on wheels with mechanical lock to lock frame in predetermined position in relation to wheels and with fluid pressure means to release mechanical lock and to cushion lowering and to effect raising of frame.

3,784,219

SUSPENSION SYSTEM FOR ROAD TRANSPORT VEHICLES

Gerrit Johan van der Burgt, Pijnacker, and Dusan Ryba, Delft, both of Netherlands, assignors to Van Doorne's Automobielfabrieken N.V., Eindhoven, Netherlands

Filed Jan. 27, 1972, Ser. No. 221,178

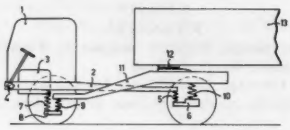
Claims priority, application Netherlands, Jan. 28, 1971, 7101116

Int. Cl. B60p *1/24*

U.S. Cl. 280—104 **7 Claims**

A suspension system for road transport vehicles in which the total axle pressure on at least one axle of the vehicle, or on two independent wheel suspensions positioned in a single transverse plane, is applied through two separate spring assemblies operating thereon. Each of the spring assemblies has

a pair of spaced springs having shock absorber means associated therewith. Each spring assembly supports a mass representing part of a vehicle and having a weight amounting



to at least one quarter of the total axle mass. The weight masses are free to move relative to one another and to move relative to the axle.

3,784,220

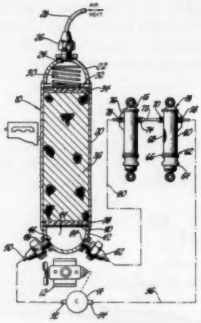
MOISTURE ELIMINATOR WITH REGENERATIVE PURGE CYCLE

Joseph W. Wanner, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 17, 1972, Ser. No. 307,217

Int. Cl. B60g *17/04*

U.S. Cl. 280—124 F **3 Claims**



A vehicle leveling system having an inlet cartridge with dessicant means therein for removing moisture from atmospheric air during a pump-up phase of operation wherein a compressor operated only in response to vehicle operation draws air from atmosphere through the dessicant means to remove moisture therefrom. During an exhaust phase of operation when the vehicle is stopped, the compressor no longer draws air through the dessicant means, the air is exhausted from the pressurized system back through the dessicant means for removing moisture therefrom. A vehicle component is located closely adjacent the cartridge for changing the temperature thereof from a reduced temperature during the intake phase of operation and to an elevated temperature at the exhaust phase of operation to provide an effective high temperature regenerative purge of the dessicant means during exhaust from the pressurized system when the vehicle is stopped.

3,784,221

AIR RIDE SUSPENSION FOR TRUCKS

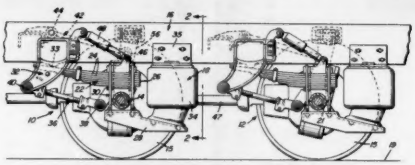
Van L. Frasier, Sr., 5227 Sportscraft Dr., Dayton, Ohio

Filed July 24, 1972, Ser. No. 274,405

Int. Cl. B60g *11/46*

U.S. Cl. 280—124 F **13 Claims**

An air-ride suspension system for vehicles such as trucks, tractors, trailers, and the like has a spring and an air bag attached to an axle of the vehicle and arranged outside a frame thereof for permitting the axle to be selectively moved toward the frame a distance sufficient to lift a wheel on the axle out of contact with a surface supporting the vehicle. The suspension has a pair of adjustable, pivotally mounted torque arms positioned embracing the spring and arranged in parallel so as to form a parallelogram to prevent the axle from turning over. A shock absorber is arranged in a fixed position between the axle and the frame for absorbing shocks received by the axle. A semi-cylindrical insert is provided for adapting the system to an axle having a square cross section. This insert has a planar face provided with a recess arranged to receive the axle for permitting a beam connecting the air bag to the axle to pivot



or tilt the axle and arrange its drive line at a desired angle. A system particularly suitable for use when lifting an axle off the vehicle supporting surface when the axle is not in use has an additional spring in place of the upper torque arm connected between the axle and the frame at points adjacent ends of the first mentioned spring, and arranged in a plane substantially parallel to that spring and spaced therefrom toward the frame.

3,784,222

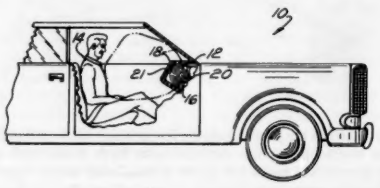
SAFETY APPARATUS

Richard Chute, Huntington Woods, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 849,394, Aug. 12, 1969, Pat. No. 3,638,964. This application July 16, 1971, Ser. No. 163,189

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 AB **4 Claims**



An improved safety apparatus for protecting an occupant of a vehicle during the occurrence of an accident includes an expandable confinement having a collapsed condition and an expanded condition for restraining an occupant of the vehicle during an accident. A unitary assembly for effecting expansion of the confinement includes a percussion actuated explosive valve which is impacted with an actuator in response to the occurrence of an accident to effect operation of the valve to an open condition. Opening the valve enables fluid to flow from a source of fluid to the confinement to effect expansion of the confinement. The actuator can be either a mass which is impacted against the valve in response to the occurrence of an accident or a fixed member against which the valve is impacted. The flow of fluid from the source of fluid is at least partially stabilized by a flow regulator assembly to thereby tend to eliminate "peak" or excessively high rates of expansion of the confinement.

3,784,223

SAFETY APPARATUS

David P. Hass, Detroit, and John E. Kunz, Westland, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

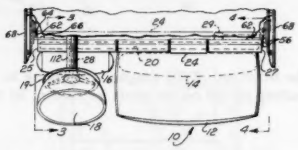
Filed June 10, 1971, Ser. No. 151,665

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **19 Claims**

A safety apparatus for a vehicle includes a plurality of expandable confinements for protecting an occupant of the vehi-

cle during an accident, an elongate diffuser member, an elongate fluid reservior disposed concentrically with the longitudinal axis of the elongate diffuser member, and a valve for effecting fluid flow from the reservoir. The valve is mounted at one end of the reservior and engages with one end portion of the diffuser member so as to positively locate the diffuser member relative to the reservior. Mounting means are provided for supporting the ends of the diffuser member adjacent the side walls of the vehicle, and providing for relative movement of the diffuser member and the vehicle in the event an occupant impacts with the diffuser member so as to absorb and dissipate the kinetic energy of the occupant. The diffuser



member includes a first group of openings for directing fluid to a first one of the plurality of confinements and a second group of openings for directing fluid to a second one of the plurality of confinements. The first and second groups of openings each have an effective area and a location on the elongate diffuser member to control the fluid flow from the reservior so as to effect expansion of their associated confinements in a predetermined manner.

3,784,224

PASSENGER SAFETY DEVICE

Donald H. Peeler, Raleigh, N.C., assignor to Irvin Industries Inc., Greenwich, Conn.

Filed Dec. 8, 1971, Ser. No. 205,914

Int. Cl. B60r *21/02*

U.S. Cl. 280—150 B **8 Claims**

A safety seat and safety cushion which are preferably used in combination with each other and with a safety belt as a passenger safety device for protection of a child during vehicular travel.

3,784,225

OCCUPANT RESTRAINT SYSTEM

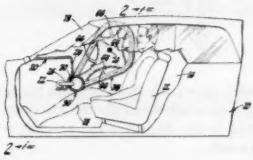
Lawrence L. Fleck, Warren, and Robert Hickling, Royal Oak, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 2, 1972, Ser. No. 294,151

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **3 Claims**

An occupant restraint system for an automotive vehicle includes a cylindrical lower inflatable cushion mounted on the instrument panel of the vehicle and communicating with an inflator. The inflated lower cushion functions as a knee cushion when engaged with the knees of a seated vehicle occupant. An upper inflatable cushion includes a plurality of side-by-side interconnected fluid passageways looped to the lower cushion and having their ends opening to the lower cushion so as to be inflated by pressure fluid received therefrom. The upper cushion is provided with end walls having openings to the interior thereof. These openings are each provided with sleeve type valves permitting the induction of ambient atmosphere into the upper cushion when the fluid passageways of the upper cushion are inflated. The end walls also include



openings covered by porous material to permit the expulsion of the ambient atmosphere from within the upper cushion upon engagement with the torso of the seated occupant. The upper cushion is normally folded adjacent the lower cushion. When the lower cushion is inflated, it initially functions as a deployment cushion as it moves the upper cushion outwardly from the instrument panel. The lower cushion then inflates the fluid passageways of the upper cushion as the upper cushion is inflated to induct ambient atmosphere into the upper cushion and complete the inflation thereof.

3,784,226

DEVICE FOR REDUCTION OF SOILING OF MOTOR VEHICLES

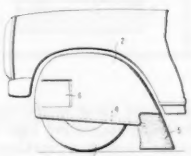
Karl Wilfert, Gerlingen-Waldstadt, and Hans Gotz, Sindelfingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Sept. 22, 1972, Ser. No. 291,185

Claims priority, application Germany, Sept. 24, 1971, P 21 47 750.9

Int. Cl. B62b *9/16*

U.S. Cl. 280—157 **12 Claims**



A wheel casing for reducing the self-soiling and the external soiling of motor vehicles so secured that it is able to follow the spring movements and possibly also any steering movements; on the inside of the casing, on each side thereof, is provided a water-collecting groove extending at an inclination from the front downward toward the rear and an apron consisting of elastic, coarse-porous material is arranged at the rear end of the casing, which extends down to a position very close to the road surface.

3,784,227

RETRACTABLE STEP FOR PASSENGER VEHICLES

Gail E. Rogge, 23851 Lyon St., San Jacinto, Calif.

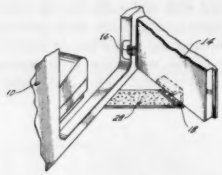
Filed June 19, 1972, Ser. No. 263,927

Int. Cl. B60r *3/02*

U.S. Cl. 280—166 **6 Claims**

A retractable step for a pickup truck or other vehicle which includes a tread member secured at one end to a bracket

which attaches to and extends downwardly from the bottom of the door. The tread member extends inwardly beneath the car and is slidably supported by a U-shaped bracket mounted to and beneath the frame of the truck. Opening the door slides

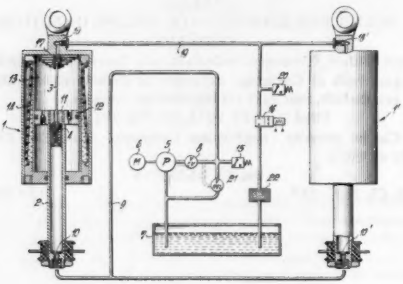


the tread member outwardly from beneath the truck, the tread member being supported, when the door is open, between the bracket attached to the door and the bracket attached to the frame to form a step.

3,784,228
REGULATING APPARATUS FOR A FLUID CONTROLLED CAR SUSPENSION

Hans-Jurgen Hoffmann, Schalksmuhle-Heedfeld, and Friedhelm Fischer, Villigst, both of Germany, assignors to Hoesch Aktiengesellschaft, Dortmund, Germany

Filed July 17, 1972, Ser. No. 272,657
Claims priority, application Germany, Oct. 22, 1971, 2152601
Int. Cl. B60g *17/00*
U.S. Cl. 280—6 H **12 Claims**



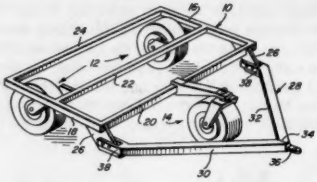
A regulating apparatus for a motor car suspension has resilient shock absorbing supporting legs, each including a cylinder and a piston forming a working chamber in the cylinder connected by conduits with a pump started by a door switch of the car otherwise used for illuminating the interior of the car. The fluid pumped into the working chamber compensates an increased load, and a decreased load causes discharge of fluid from the working chamber, for maintaining the suspension at a normal level. Instead of a pump, an other pressure fluid source can be used which is connected by an electromagnetic valve with the working chamber when the door switch, or other control switch, is operated. The control switch can also be operated by the trunk lid, or be a manual switch operated by the driver.

3,784,229
TORQUE HINGE FOR DRAFT MEMBER

Edwin A. Seifert, Jr., Route 1, Belgrade, Mont.

Filed May 23, 1972, Ser. No. 256,129
Int. Cl. B60d *1/06*
U.S. Cl. 280—446 R **5 Claims**

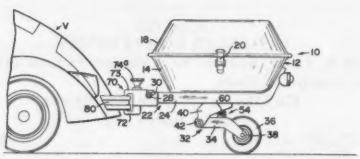
A hinge connection between a draft implement and its towing tongue allowing the forward end of the tongue to swing up and down about a horizontal transverse axis relative to the draft implement. The hinge connection further includes structural features whereby increasing downward forces are applied to the front end of the tongue in response to increasing forward pulling forces on the draft implement by the towing tongue.



3,784,230
UTILITY TRAILER

Ashton L. Worrall, Jr., 325 Edison-Furlong Rd., Doylestown, Pa.

Filed Dec. 27, 1971, Ser. No. 212,118
Int. Cl. B60d *1/04*
U.S. Cl. 280—491 **6 Claims**

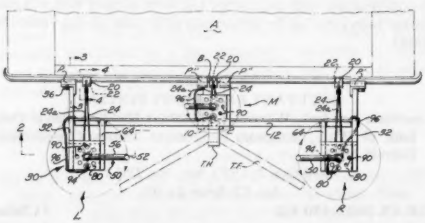


A lightweight serviceable utility trailer which can double as a wheelbarrow. The trailer includes a trailer body with a support frame therefor. A pair of support arms are provided for pivotal connection to the trailer to convert it to a wheelbarrow type of vehicle. A trunnion means pivotally connects the trailer frame to a snubber and wheel assembly for support purposes. Clamp members are provided on the frame to secure the trailer to a vehicle.

3,784,231
TOW HITCH

Donald G. Knowles, 7471 N. Meadowpark Dr., Bedford, Ohio

Filed June 21, 1972, Ser. No. 264,726
Int. Cl. B60d *1/14*
U.S. Cl. 280—502 **9 Claims**



A tow hitch adapted to be releasably clamped to a vehicle bumper to effect a tow connection between two vehicles. The

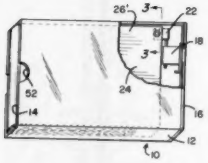
hitch includes a tow connection member, ball or socket, and at least one clamping mechanism for clamping the connection member to the bumper. Each clamping mechanism includes a pair of bumper clips adapted to be connected to spaced apart bumper edges. A cable interconnecting the clips is placed in tension by forces applied intermediate the length of the cable to force the frame of the tow hitch against the bumper.

3,784,232

APPARATUS FOR SECURING ARTICLES

Alan D. Greene, 19 Shirlawn Dr., Short Hills, N.J.

Filed May 25, 1972, Ser. No. 256,754
Int. Cl. B42d *3/10, 3/18*
U.S. Cl. 281—20 **2 Claims**



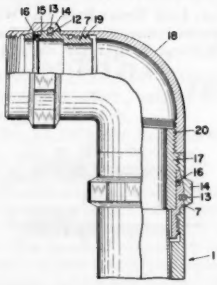
A carrier for checksheets, such as a checkbook binder, having a latch-engaging, dowel-like element extending projectingly from one of the carrier covers and in penetration of the other cover, is slidably received in a portable container. The container comprises a box having only one open end, through which the carrier is inserted thereinto, and the container has a locking mechanism fixed to the inner surface thereof, opposite the open end, which is operative for engaging the dowel-like element to secure the carrier within the container.

3,784,233

CABLE-TERMINATION ADAPTER

Wolfgang Herman Gustav Hilbert, Holzkirchen, Germany, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Oct. 15, 1971, Ser. No. 189,628
Int. Cl. F16l *25/00*
U.S. Cl. 285—12 **2 Claims**



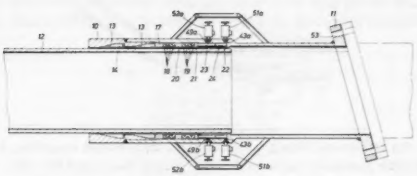
A straight-line backshell assembly providing strain relief and shield grounding for an electrical cable connector is separable between the tubular housing section which carries the cable gripping means and the rotatable-ring coupling section which is adapted to screw on the rear of the connector. For an angular backshell, an elbow section of the desired angle and an identical rotatable-ring coupling section are added to the straight-line backshell assembly.

3,784,234

HYDRAULIC CONNECTOR ACTUATING APPARATUS

Harvey O. Mohr, Houston, Tex., assignor to Hydrotech International, Inc., Houston, Tex.

Filed Oct. 18, 1971, Ser. No. 189,982
Int. Cl. F16l *35/00*
U.S. Cl. 285—18 **4 Claims**



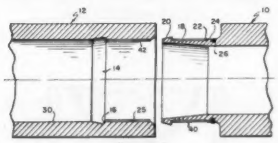
A hydraulically actuatable connector having a housing adapted for positioning about a tubular member, means carried by the housing for gripping the tubular member, and a plurality of longitudinally aligned cylinders circumferentially spaced about within the housing is provided with a plurality of coaxially aligned pistons slidably positioned in each cylinder arranged to actuate the gripping means in response to a hydraulic pressure. Means are included for selectively applying a hydraulic pressure to selected ends of the pistons in each cylinder after they have actuated the gripping means into gripping engagement with the tubular member. The method includes selectively applying hydraulic fluid and hardenable hydraulic fluid to the pistons to clamp and lock the connector to the tubular member.

3,784,235

TUBULAR ADHESIVE JOINT WITH SNAP LOCK

Hyman Kessler, Silver Spring, and Harvey L. Peritt, Beltsville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 8, 1971, Ser. No. 187,673
Int. Cl. F16l *13/10, 47/02*
U.S. Cl. 285—21 **7 Claims**



A pipe coupling including male and female attachment members connected to a pair of tubular sections which are to be coupled. The female attachment member includes a circumferential groove formed interiorly therein while the male attachment member includes a reduced diameter portion whose outer diameter is smaller than the inner diameter of the female attachment member and which has an outwardly extending lip formed at the edge thereof which will interfere with the female attachment member on assembly. Adhesive is deposited on the outer surface of the reduced diameter portion and on the inner surface of the female member and upon assembly, the male member is inserted into the female member until the lip snaps into the groove whereupon both a mechanical and adhesive connection is attained.

3,784,236
FITTING FOR FLEXIBLE CONDUITS

Fred H. Slocum, Pittsburgh, Pa., assignor to Robroy Industries, Verona, Pa.

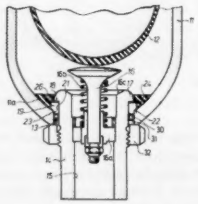
Filed Oct. 5, 1971, Ser. No. 186,683
Int. Cl. F16l *11/12*
U.S. Cl. 285—45 **6 Claims**

An improved fitting, especially a compression coupling, for flexible conduits, such as flexible plastic hose and the like. A coupling includes a coupling nut assembly and further includes a rigid, usually metallic, nipple having a fluid passageway therethrough. The nipple is adapted to slidably receive and mount a flexible conduit thereon whereby the conduit may pass into and be received by the coupling. The coupling nut assembly comprises male and female members adapted to be engaged, as by threading, whereby an annular gasket is urged into annular compressing contact with a conduit in the coupling. Integral sleeve means are provided extending from said coupling in operable contact with said conduit whereby crimping or breaking of the conduit near the end of the nipple on which it is mounted is substantially eliminated. Preferred sleeve means comprises a polymeric coating, especially a polyvinylchloride coating, bonded to the coupling nut assembly and terminating in a polymeric annular sleeve extending from the coupling nut assembly and terminating in a polymeric annular sleeve extending from the coupling nut and adapted to receive a flexible conduit passing into the coupling. In that fashion, crimping and breaking of the flexible conduit in the coupling is substantially prevented.

3,784,237
PRESSURE CONTAINER TUBE CONNECTION

Wilhelm Zirps, Hemmingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed June 8, 1972, Ser. No. 260,785
Claims priority, application Germany, June 12, 1971, P 71 22 754.8
Int. Cl. F16l *41/00*
U.S. Cl. 285—208 **3 Claims**

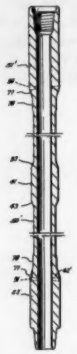


A tube is connected with a pressure container by a flange end portion located in the container pressing against the holder ring which closes the gap in the opening of the container around the tube. An elastic annular body has a slot into which a flat resilient annular hard disk is partly inserted so that an annular disk portion is clamped between the flange end portion and the holding ring, permitting easy assembly.

3,784,238
INTERMEDIATE DRILL STEM

Glenn G. Chance; Sam T. Crews, both of Houston, and Clenis E. Wilson, Spring, all of Tex., assignors to Smith International, Inc., Midland, Pa.

Filed May 17, 1971, Ser. No. 143,953
Int. Cl. F16l *13/02*
U.S. Cl. 285—286 **25 Claims**

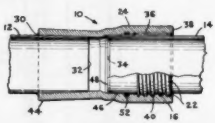


Intermediate drill stem includes an alloy steel body of smaller inner diameter than usual for drill pipe machined to drill pipe outer diameter except having one or more integral protectors of larger outer diameter at intervals along its length and except further having integral transition portions of somewhat larger than drill pipe outer diameter near its ends and portions of elevator shoulders at the ends, the ends also being built up externally and internally with weld metal to match the wall thickness of extra long alloy steel connector members rod welded to the ends of the body. Typically the body of the intermediate drill stem is made from a worn out drill collar and if the ends of the collar are not too far gone the original integral drill collar connectors can be used. New material may be used for the body and if anticipated loading is not too great carbon steel could be used instead of alloy steel. In any case, the integral protectors could be omitted.

3,784,239
SEALED, FILAMENT-WOUND PLASTIC SLEEVE

J. Warne Carter, 2206 Weeks Park Ln., Wichita Falls, Tex., and Martin Duane Neher, 900 Aztec St., Burkburnett, Tex.

Filed Sept. 7, 1971, Ser. No. 178,239
Int. Cl. F16l *47/00*
U.S. Cl. 285—293 **4 Claims**



A sealing ring joint for non-ferrous pipe or tubing is formed by fixing an external engaging sleeve to the end of a section of pipe or tubing and by fixing a collar member to the end of another section of pipe or tubing. External engaging means on the sleeve coact with internal engaging means in the collar to fasten the sleeve to the collar, while mating tapered sections on the sleeve and the collar coact to position, fasten and seal the sleeve in the collar when the external engaging means is engaged with the internal engaging surface of the collar. A

sealing ring groove disposed on the tapered section within the collar positions a sealing ring which coacts with the external engaging sleeve and the sealing ring groove of the collar to effectively provide a pressure seal for the joint.

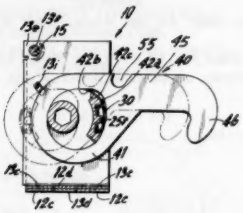
The collars are made by a filament winding process in which die members, including at least one deformable die member, are arranged into collar-forming sets which are assembled in series on a mandrel.

3,784,240

PANEL FASTENER

Irving L. Berkowitz, Binghamton, N.Y., assignor to Kason Hardware Corporation, Binghamton, N.Y.

Filed June 23, 1972, Ser. No. 265,791
Int. Cl. E05c *5/00, 19/12*
U.S. Cl. 292—111 **8 Claims**



This panel fastener comprises a casing having aligned bearing openings journalling oppositely extending aligned hubs of a circular cam. The hubs are eccentrically located relative to the axis of the cam. A polygonal central hole through said hubs and cam serve to receive a wrench to turn the cam. The cam has oppositely extending wings substantially diametrically opposed to said hubs. Said wings and cam have cut away means to cradle a curved friction spring clip. On the cam is a panel latch hook having a hole to rotatably receive the cam. About 270° of the hole in the hook, contacts the cam with a rotary fit. The remaining 90° of the hole is cornered with a curved corner edge of reduced radius to facilitate the unflexed spring clip to pass into the cornered portion of the hole in the hook, so that as the cam is thereafter rotated relative to the hook, the spring clip is flexed to frictionally press against the inner edge of the hole in the hook, to prevent looseness between the cam and hook.

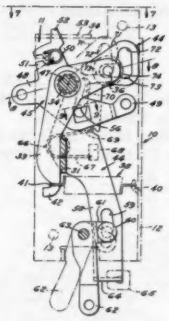
3,784,241

AUTOMOBILE LOCKING LATCH

Joseph Pickles, Birmingham, Mich., assignor to Ferro Manufacturing Company, Detroit, Mich.

Filed Dec. 14, 1971, Ser. No. 207,830
Int. Cl. E05c *13/00*
U.S. Cl. 292—216 **15 Claims**

A pair of forked keeper-engaging latch members on a door edge are pivoted on parallel axes to swing toward and away from one another, respectively into and out of latching relationship to a door post-mounted keeper pin, being strongly spring-biased toward a keeper disengaging position. They are held in keeper-engaging and latching position, in which they are well overlapped in relation to one another all about the keeper pin, by a plate-like dogging pawl on a pivoted and spring biased, bell crank-shaped pawl arm. This pawl releasably engages between dogging shoulders on the respective fork members, the latter being substantially completely enclosed within an external housing formation on a door edge surface of a mounting plate, but entirely external of that plate. The pawl is undogged in opposition to its spring bias by a vertically shiftable actuator slide when the latch is in an unlocked, non-free wheeling condition; and to this end the pawl crank arm carries, on an upper, relatively short arm portion thereof, a large headed actuator pin which is received in an L-shaped opening at the top of the actuator slide. When the pin is located at one end of a substantially horizontal leg portion of this opening, a downward shift of the slide is effective to move the pin, hence swing the pawl arm, in an undogging way to free the latch forks to spring to unlatching position. In a laterally shifted position of the slide to bring the opposite end of its vertical slot leg portion into line with the pawl arm's actuator pin, the slide will free-wheel vertically relative to said pin so that the slide is ineffective to shift the pawl out of dogging engagement between the shoulders of the latching forks. The latter are subject to spring bias only in latching and unlatching, having no gear or equivalent interconnection. Vertical shifting of the slide, whether in an unlocked condition or a locked disabled or free-wheeling condition, is through the agency of an outside manually operated bell crank or lever, which has a lost motion pin and slot connection to the lower end of the actuator slide. An over-center spring-operated locking lever has an offset tab portion engageable in an elongated slot in said slide to automatically swing the latter between its locked and unlocked conditions.

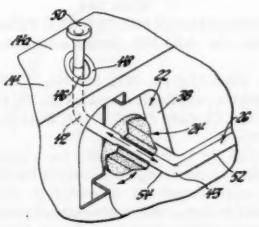


3,784,242

DOOR LOCK ACTUATOR

Kim Hill, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 5, 1972, Ser. No. 286,255
Int. Cl. E05c *13/10*
U.S. Cl. 292—336.3 **4 Claims**



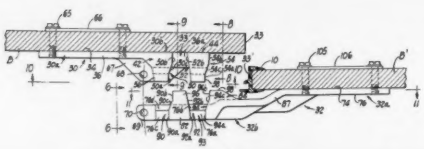
This disclosure relates to an actuator for a locking mechanism for an automobile door. The actuator comprises a support member which is pivotally supported within the door and a one-piece, flexible actuator rod. The actuator rod has a first portion that extends outwardly of the door and which is axially shiftable by manual manipulation between door lock and door unlock positions. The actuator rod has a second por-

tion that extends within the door and which is axially unaligned with the first portion. The second portion is adapted to be operably connected with the locking mechanism to effect locking and unlocking thereof in response to axial shifting of the second portion. The actuator rod also has a transverse portion between the first and second portions which is supported for axial movement by the support member. The transverse portion pivots the support member and slides axially therein, and the actuator rod deflects between the transverse portion and the first portion and between the transverse portion and the second portion in response to shifting of the first portion between its door locked and door unlocked positions for axially shifting the second portion to effect locking and unlocking of the locking mechanism.

3,784,243
DOOR STABILIZER

John V. Pastva, Jr., Parma Heights, Ohio, assignor to The Eastern Company, Cleveland, Ohio

Filed Mar. 28, 1972, Ser. No. 238,849
Int. Cl. E05c *19/00;* **E06b** *3/34*
U.S. Cl. 292—300 **13 Claims**



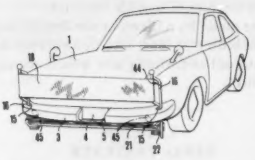
A device for restraining movement of a pivoted or hinged closure member in closed position relative to a second member at the distal edge thereof, such as an adjacent second door and/or a door frame. The restraining device is especially useful on double doors of truck trailers and cargo containers and complements the usual door latches in preventing frame racking and opening of the door in response to an internally applied force due, for example, to a load shift. The device comprises two interengageable members, one fixedly connected to a hinged closure member adjacent to the distal edge thereof and the other on an adjacent second member. Opening of the closure member is prevented by the device when both the hinged closure member and the second member, such as the second door, are moved or when forces strain the hinged closure member to cause the interengaged members to bind. Movement in the plane of the door (so-called "racking" is inhibited through a rigidifying effect from the interengagement of the members of the restraining device.

3,784,244
PEDESTRIAN PROTECTING FENDER

Tadashi Emi, No. 4-33-109, Sengoku-higashi-machi, Osaka, Japan

Filed Aug. 29, 1972, Ser. No. 284,753
Claims priority, application Japan, Feb. 28, 1972, 47/21834
Int. Cl. B60r *19/08, 21/14;* **B61f** *19/10*
U.S. Cl. 293—25 **12 Claims**

A pedestrian life saving apparatus for a motorcar. The apparatus includes a mounting frame secured to the underside of a chassis and bumper of a motorcar for mounting a mechanism of the apparatus, a panel attached to the front portion of a bumper of the car through a cushioning means, a pair of poles having pins at the lower ends thereof and perpendicular to said panel, said poles penetrating through said panel at both ends thereof, a soft net stretched between the upper portion of said poles, a slidable frame with a life net stretched thereon and slidable on said mounting frame, a spring mounted between said mounting frame and said slidable frame. The poles are pivoted at the middle portion thereof on the panel. The pins of the poles are engaged with the front portion of the slidable frame so as to keep the slidable frame under the chassis of the car against the spring, but are disengageable with the slidable frame by the rocking movement of the poles, whereby the slidable frame being projected forward of the bumper by the force of the spring.



3,784,245
SHOVEL

Josef Koller, 8069 All am Aigen, Uber Pfaffenhofen/Ilm, Germany

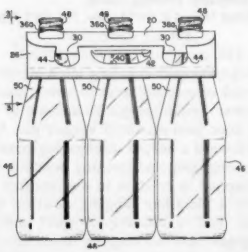
Filed Jan. 12, 1972, Ser. No. 217,319
Claims priority, application Germany, Jan. 14, 1971, G 71 01 221.0
Int. Cl. A01b *1/02*
U.S. Cl. 294—54 **4 Claims**

A generally rectangular flap is pivotally connected to the blade of a shovel near its front terminal edge, with the longitudinal edge of the flap opposite the pivot being slightly upturned. As the shovel is thrust forward through a media, such as snow, the flap is pivoted flush upon the shovel blade, and when the shovel is pulled rearwardly the media on the blade raises the flap to a raised locked position at right angles to the blade to entrain the media on the blade for removal, particularly from beneath an object.

3,784,246
BOTTLE CARRIER

Mindaugas Julius Klygis, Evergreen Park, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed May 1, 1972, Ser. No. 249,062
Int. Cl. B65d *71/00*
U.S. Cl. 294—87.2 **9 Claims**



A carrier for a plurality for bottles arranged in a row. The carrier is made from a resilient deformable plastic sheet material which folds and mechanically locks into a prism-like shape in which the end faces are triangles. Aligned apertures

through the base and apex of the carrier provide an interlocking relationship of the carrier with the bottles such that the side walls of the carrier are bowed outwardly to project the marginal edges of the apertures in the apex of the carrier firmly against the underside of the cap portion enlargements of the bottles with the marginal edges of the apertures in the base of the carrier being firmly circumferentially urged downwardly against the enlarging neck portions of the bottles. The bottle gripping apertures in the apex of the carrier are defined by partially lapped larger apertures in lapped sections of the carrier. Simple tabs permit the carrier to be unlocked and the larger apertures in lapped sections of the carrier may then be axially aligned to permit the carrier to be easily lifted from the bottles. The carrier may be reused by mechanically interlocking the tabs in the tab receiving apertures and projecting the carrier downwardly over the bottles until the apex apertures snap below the enlarged cap portions of the bottles.

3,784,247

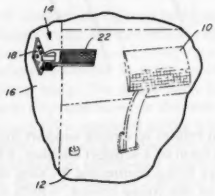
FOOT REST FOR TRUCKS

Billy R. Mills, 250 East St., Wasco, Calif.

Filed Nov. 2, 1971, Ser. No. 194,932

Int. Cl. B60n *3/06*

U.S. Cl. 296—75 **1 Claim**



A driver's footrest for attachment to the interior of a vehicle including a base member having a vertical portion adapted to be affixed to a vehicle interior wall and an integral horizontal extending portion, an elongated step member pivotally affixed to the base member horizontal portion and pivotal between a horizontal position adaptable to receive the placement of the driver's foot thereon, for resting the driver, and pivotal in a vertical position wherein the foot rest is removed from interference with the driver.

3,784,248

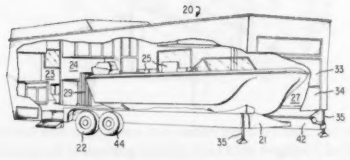
COMBINATION MOBILE SHELTER AND SEPARABLE RECREATIONAL EQUIPMENT CARRYING TRAILER

Richard L. Neuman, Houston, Tex., assignor to The Laitram Corporation, New Orleans, La., a part interest

Filed Aug. 7, 1972, Ser. No. 278,233

Int. Cl. B60p *3/32*

U.S. Cl. 296—23 B **5 Claims**



The present disclosure is directed to a load carrying trailer which is removably coupled to and transported within a shelter trailer wherein both are attached to a vehicle and pulled by a central draft beam on the first trailer, or if desired, trailered separable by means of secondary hitch; and because of their compactability, lend themselves to providing a mobile shelter for living within when arriving at a shelter site and permitting transport of a powered water-borne craft or motor vehicle on a load carrying trailer to and from the scene of recreational activity without having to disturb the shelter trailer.

3,784,249

CHAIR WITH FOLDABLE TABLET ARM

Philip J. Hendrickson, and Richard J. Resch, both of Green Bay, Wis., assignors to Krueger Metal Products, Inc., Green Bay, Wis.

Continuation of Ser. No. 886,174, Dec. 18, 1969, abandoned. This application Mar. 1, 1972, Ser. No. 230,946

Int. Cl. A47b *39/00*

U.S. Cl. 297—162 **9 Claims**

A folding chair of the Y type has an offset post fixed to its rear leg for supporting the rear end of a tablet arm. The front end of the tablet arm is collapsibly supported on a transversely fulcrumed brace. A lock holding the front of the tablet arm against collapse is released by slightly lifting the tablet arm and tilting it to an on-edge position, whereupon the front end of the tablet arm may be lowered along its brace toward storage position.

3,784,250

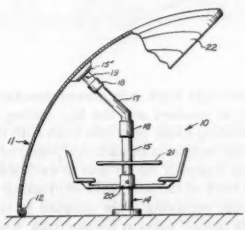
REVOLVABLE CANOPY HAVING TWO POINT SUSPENSION

Archie W. Beeman, P.O. Box 245, Odessa, Tex.

Filed Aug. 30, 1971, Ser. No. 175,920

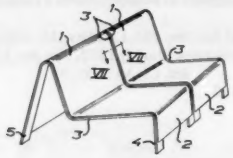
Int. Cl. A47c *29/00*

U.S. Cl. 297—184 **4 Claims**



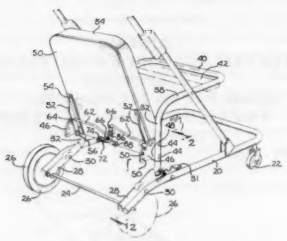
A revolvable canopy supported from a base by a two point suspension arrangement. The canopy includes an umbrella having a circumferentially extending edge portion which bears against a base while a swingable arm is attached to the central axis thereof. The swingable arm is journaled to a vertical support post with the lower end of the post being received by the base so as to form the second suspension point. The swingable arm can be swung 360° about the post while the umbrella peripheral edge portion rolls about in a manner to describe a circle upon the base.

3,784,251
FURNITURE ASSEMBLIES
Eric Sigrid Persson, Horby, and Signe Harriet Persson-Melin, Malmo, both of Sweden, assignors to Expo Nord AB, Horby, Sweden
Filed Feb. 3, 1972, Ser. No. 223,264
Claims priority, application Sweden, Feb. 4, 1971, 1376/71
Int. Cl. A47c 1/124
U.S. Cl. 297—248 6 Claims



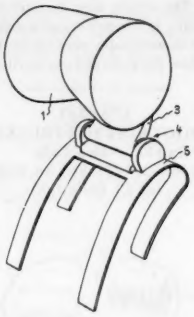
A furniture assembly comprises a piece of sitting furniture and at least one furniture part releasably coupled with said piece of furniture, said furniture part and said piece of furniture each having on confronting sides one coupling flange which is substantially L-shaped in cross section, said flanges extending in parallel and in coupling engagement along at least parts of their lengths and having within said parts of their lengths length portions directed at an angle to the horizontal plane.

3,784,252
SEAT BACK ADJUSTMENT MECHANISM FOR BABY PRODUCTS
Arnold E. Peterson, Glendale, Calif., assignor to Peterson Baby Products Co., North Hollywood, Calif.
Filed Dec. 27, 1971, Ser. No. 212,212
Int. Cl. B60n 1/02
U.S. Cl. 297—364 4 Claims



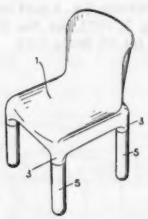
An improved seat back adjustment mechanism for baby products such as strollers and the like having a positive engagement and being easily operable even with the baby in the stroller. The mechanism is in part comprised of a sector plate mounted to the frame of the stroller at each side of the lower portion of the back of the seat, with each sector plate having a first hole therein receiving a pin coupled to the back of the seat to provide pivotal support for the back, and a plurality of additional holes distributed in an arc about the pivot hole. A lever member is pivotally attached to the lower portion of the seat back, with engaging members pivotally attached thereto and projecting outward through members attached to the seat back so as to be engageable with any of the holes in the sector members. A coil spring is connected to the lever member to encourage the lever member to a position whereby the engaging members are in an extended position, with an actuating member attached to one of the engaging members to provide a convenient means of actuating the mechanism for adjustment of the position of the back.

3,784,253
NECK SUPPORT
Hans Karl Kohler, Biel, and Fred W. Trachsel, Berne, both of Switzerland, assignors to Compagnie Industrielle Radioelectrique, Berne, Switzerland
Filed Mar. 7, 1972, Ser. No. 232,539
Claims priority, application Switzerland, Mar. 8, 1971, 3380/71
Int. Cl. A47c 1/10, 7/36
U.S. Cl. 297—410 4 Claims



This invention relates to a neck support for car seats having a support roll in form of a support cushion, a lever and a fixing device, said lever being connected by stop devices as well to the cushion as to the fixing device, which is fixed in such a manner to the back rest of the car seat, that it can be brought and secured in several positions relatively to the back rest, in which said stop devices which connect the cushion to the lever are at least almost identical to those which connect said lever to the fixing device.

3,784,254
PRE-STAMPED SEATING DEVICE
Giuseppe Longato, Via Makalle 19, Padova, Italy
Filed May 15, 1972, Ser. No. 253,123
Claims priority, application Italy, Sept. 15, 1971, 7089 B/71
Int. Cl. A47b 3/06
U.S. Cl. 297—445 2 Claims



A chair made of prestamped synthetic plastic material, having underneath the seat a plurality of sleeves with frusto-conical scored or knurled regions, which accept thereon mating threaded regions provided in the upper extremities of the chair's legs. The basis of the scored or knurled region in the legs forms an annular ledge for perfect assembly due to the smaller diameter of the scored or knurled region in the leg.

3,784,255

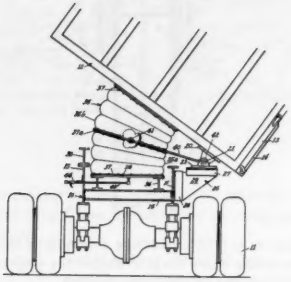
AIR-BAG ELEVATED DUMP VEHICLE

Edmund G. Smock, 1502 August St., Zanesville, Ohio

Continuation-in-part of Ser. No. 148,783, June 1, 1971, Pat. No. 3,711,157. This application Sept. 11, 1972, Ser. No. 287,764

Int. Cl. B60p *1/16*

U.S. Cl. 298—8 T 8 Claims



A dump vehicle comprising a dump body pivotally mounted on the vehicle chassis frame for movement between a horizontal normal position and an inclined dumping position using an air bag or air bellows assembly as a means of power to raise and lower the dump body. The dump body is so pivoted and the air bellows is so disposed between the body and the chassis frame that maximum lift is obtained with a minimum stroke of the air-bag assembly. The air-bag assembly consists of two or more air bags stacked in end-to-end relationship to obtain maximum lift. A stabilizer plate is disposed between the adjacent ends of the two bags and is hinged at the pivot point of the dump body so as to prevent undue lateral displacement of the bag assembly as the bags are expanded into an arcuate body with its axis concentric with the hinged or dump axis.

3,784,256

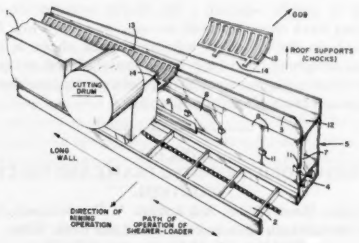
DUST CONTROL IN LONGWALL MINING

John E. Katlic, Madison, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed June 1, 1972, Ser. No. 258,563

Int. Cl. E21c *35/22*

U.S. Cl. 299—12 25 Claims



Method and apparatus for removing dust ladened air from the vicinity of a moving mining machine engaged in longwall mining, wherein a conduit maintained at reduced pressure is parallel and fixedly positioned with respect to the path of operation of the longwall mining machine, and the machine activates ports in the section of the conduit adjacent to the mining machine irrespective of the location of the machine within its field of locomotion. The air is exhausted from the conduit and directed to the fallen roof area of the mine.

3,784,257

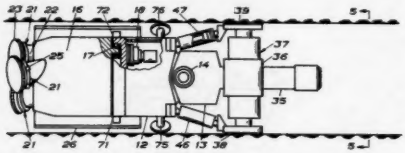
STEERING SYSTEM FOR A TUNNEL BORING MACHINE

Ernst Abraham Lauber, and Josef Birrer, both of Thun, Switzerland, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Feb. 16, 1972, Ser. No. 226,814

Int. Cl. E01g *3/04*

U.S. Cl. 299—31 8 Claims



A tunnel boring machine having a large rotary boring head carried by a main frame which consists of a forward portion and a rear portion, the two portions being hinged together so as to provide for the lateral steering. Power actuated clutches are provided for locking the hinge connection. A bar of the rear frame portion extends rearwards and it is slidably guided in an anchoring device so that the vertical steering can be effected by raising and lowering the slide in the anchoring device. The machine is advanced, and steered laterally as well, by means of two hydraulic jacks connected between the anchoring device and the forward frame portion.

3,784,258

GUIDE SYSTEM FOR MINE-PLANER BLADES

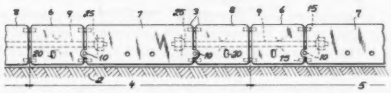
Gert Braun, and Ernst Braun, both of Essen-Heisingen, Germany, assignors to Halbach & Braun, Wuppertal-Barmen, Germany

Filed Feb. 4, 1972, Ser. No. 223,661

Claims priority, application Germany, Feb. 6, 1971, P 21 05 582.3

Int. Cl. E21c *27/34*

U.S. Cl. 299—34 14 Claims



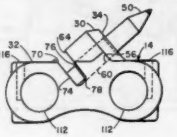
A mine excavator such as a coal planer comprising a flight-type conveyor along the periphery of the conveyer trough or rail of which planer blades are provided to remove coal from the walls and floor of the excavation and direct the mass onto the conveyer. The guiding system for the planer blades comprises articulated guide segments mounted along the rails at the sides of the conveyer trough, limitedly movable in the vertical plane and grouped to include a pair of end segments separated by a central segment whose length is twice that of the end segments. The segments are hinged for relative angular movement about horizontal axes close to the floor-engaging (stress or impact) side of the assembly while successive pairs of central segments are interconnected by high-force constant flexing rods traversing the intervening end segments of two successive sets. The segments are held in a channel of the conveyer pan with limited freedom of up and down movement and are enabled to cant in a plane parallel to the rails.

3,784,259

CUTTING CHAIN LINK FORMED AS INTEGRAL ELEMENT

Fay E. Munger, Upper Arlington; Warren E. Fife, and Alfred P. Paolini, both of Columbus, all of Ohio, assignors to Jeffrey Galion Inc., Columbus, Ohio

Filed Apr. 12, 1972, Ser. No. 243,194
Int. Cl. E21c 25/34
U.S. Cl. 299—84 7 Claims



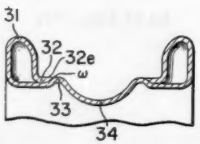
A cutting chain for mining apparatus which includes chain links with integral protruding bosses. Some of the bosses are laterally centered on the chain link bodies, and some of the bosses are laterally offset on the chain link bodies. Each boss terminates in a face that is obliquely disposed with respect to the direction of advance of the cutting chain. Each cutting chain link has a cutter bit receiving bore which extends from the oblique face into the chain link body.

3,784,260

WHEEL RIM

Kumakichi Araya, No. 2, Daishoji Seki-machi, Kaga, Japan

Filed Nov. 12, 1971, Ser. No. 198,122
Claims priority, application Japan, Feb. 2, 1971, 46/21796; Feb. 2, 1971, 46/21795
Int. Cl. B60b 21/10
U.S. Cl. 301—97 3 Claims



A wheel rim in which the top end of the horizontal tire carrying seat formed continuously with the curled flange portion is seam-welded to the shoulder which is bulged outwardly toward the inner tube.

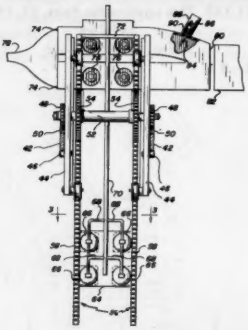
3,784,261

ARTICLE TRANSFER APPARATUS

Terry C. Potter, Sylvania, and Roger R. Rhoads, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 155,005, June 21, 1971. This application Nov. 6, 1972, Ser. No. 304,066
Int. Cl. B65g 51/02
U.S. Cl. 302—2 R 6 Claims

Article transfer apparatus for cyclically transferring articles from an article forming machine, such as a plastic injection molding machine, to an adjacent article receiving chute or conveyor system. The transfer apparatus is mechanically linked to and driven by relative movement of platens on the forming machine to positively interlock the forming and transfer mechanisms against interference with each other. A control system operated by mechanical elements of the transfer system is employed to control the application of pressure or vacuum to article handling elements of the system at appropriate points in the cycle to enable the elements to grip, release or convey the article being handled.

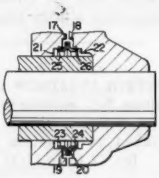


3,784,262

DEVICE FOR INTERCONNECTING TRACK SHOES OF A CRAWLER

Hiroyuki Kaizaki, and Takeshi Kato, both of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed June 17, 1971, Ser. No. 154,010
Claims priority, application Japan, Feb. 15, 1971, 46/7408 (utility model)
Int. Cl. B62d 25/00
U.S. Cl. 305—11 1 Claim



A device for interconnecting track shoes of a track shoe assembly or crawler wherein a link fixedly mounted on one of adjoining track shoes is fixedly secured to a pin, a link fixedly mounted on the other of adjoining track shoes is fixedly secured to a bush, said bush being loosely fitted to said pin, and a dished-plate spring or springs is/are interposed between the opposed faces of said adjoining links.

3,784,263

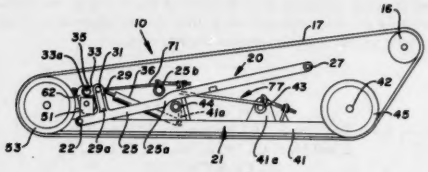
SNOWMOBILE RUNNING FRAME AND TRACK CONTROL

G. Vernon Hendrickson, and Kermit A. Hendrickson, both of c/o Hendrickson Snowmobile Sales, Lake Park, Minn.

Filed Nov. 17, 1972, Ser. No. 307,220
Int. Cl. B62m 27/02
U.S. Cl. 305—22 8 Claims

A frame device for showmobiles and other track or belt driven vehicles which includes a first frame member attachable to the vehicle with a second lower frame section arranged for supporting the lower and particularly rear track supporting elements thereon which member is pivotally attached to the first frame member and upon such pivoting, a cam element pivotally supported between the first frame member and the second frame member drives the rear track supporting

member rearwardly such that the rear track supporting member will maintain proper tension on the track. Spring loading arrangements are provided to normally keep this second supporting frame member in its normal ground contacting position.



3,784,264

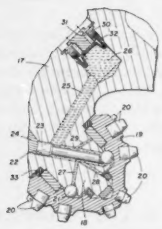
EARTH BORING BIT BEARING SYSTEM HAVING A PITTED BEARING SURFACE

G. C. Jackson, Jr., Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 2, 1971, Ser. No. 120,142

Int. Cl. F16c *33/12*

U.S. Cl. 308—8.2 **24 Claims**



The bearing surface of one relatively rotatable member of a friction bearing is grit blasted to give it a roughened surface. A reservoir containing lubricant having entrained particles of anti-galling material is connected to the friction bearing and serves as a source of anti-galling material. Particles of the anti-galling material are picked up by the roughened surface and a film of anti-galling material formed on the bearing surface.

3,784,265

JOURNAL BEARING

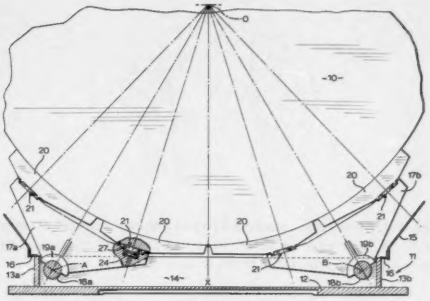
Arthur Selwyn Cornford, 561 Bobolink Rd., Mississauga, Ontario, Canada

Filed Dec. 18, 1972, Ser. No. 316,135

Int. Cl. F16c *17/06*

U.S. Cl. 308—73 **8 Claims**

In a journal bearing for large cylindrical journals, the load is distributed equally over two pairs of bearing shoes, the shoes of each pair being mounted by spherical pivots on a respective rocker member. Each of the rocker members is pivoted about an axis extending parallel to the bearing axis, the pivotal axes being symmetrically disposed on opposite sides of a vertical plane intersecting the journal axis. Thus the load is distributed in such a way as to minimize bending stresses in the bearing support structure. Means are provided to permit removal of a bearing shoe without dismantling of the bearing assembly.



3,784,266

PIVOTED, SEGMENTAL, THRUST BEARING PROVIDING SIMULATED OFFSET SUPPORT OF CENTRALLY SUPPORTED BEARING SEGMENTS

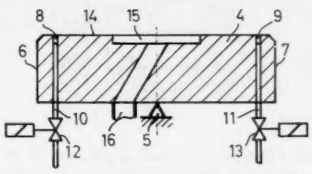
Theodor Parlevliet, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 1, 1973, Ser. No. 337,013

Claims priority, application Germany, Mar. 6, 1972, P 22 11 414.3

Int. Cl. F16c *17/06*

U.S. Cl. 308—160 **4 Claims**



In a hydrodynamic pivoted segmental thrust bearing, a centrally supported, pivoted bearing segment including at least one elongated lubricating fluid collection groove disposed in the bearing surface of the segment adjacent and parallel to at least one of the radial edges thereof, and at least one fluid outlet aperture disposed through the segment opening at one end into the groove and at the other end into the thrust bearing well of the bearing. The collection groove drains fluid from the bearing surface into the bearing well, and interrupts the formation of the bearing surface lubricating fluid film, thereby reducing the effective bearing surface on one side of the segment. A simulated offset support of centrally supported segments is thus achieved.

3,784,267

SQUEEZE FILM BEARING SUPPORT MOVEMENT LIMITING APPARATUS

Leonard C. Davis, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

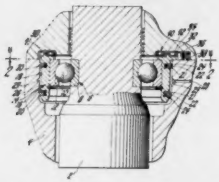
Filed Dec. 15, 1972, Ser. No. 315,343

Int. Cl. F16c *19/14*

U.S. Cl. 308—174 **3 Claims**

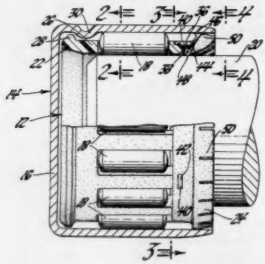
A shaft bearing assembly uses "squeeze film action" to damp vibrations in an annular bearing support member. To prevent the annular support member from rotating about its axis with the shaft but allow the freedom of movement in any

radial direction necessary for the squeeze film action, a linking member has one end pivotally connected to the housing and



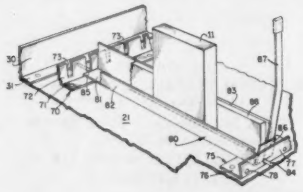
the other pivotally connected to the annular support member near its outer edge. A thrust bearing between the housing and annular support member bears axial loads.

3,784,268
BEARING SEAL
Peter A. De Gioia, Sandusky, and Charles B. Sutton, Port Clinton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 22, 1972, Ser. No. 317,373
Int. Cl. F16c *33/78*
U.S. Cl. 308—187.2 **4 Claims**



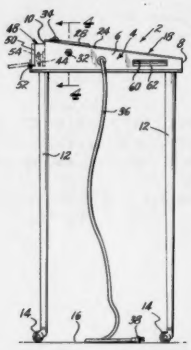
A needle roller package bearing disposed on the end of a shaft has a combined nylon separator-seal. The seal element is connected to the separator element by a thin annular web and is provided with flyweights to enhance sealing efficiency during operation of the bearing.

3,784,269
DISPLAY CASE
Marshall S. Frenkel, Des Plaines, Ill., assignor to Pan-American Records (Casa Pan Americana) Inc., Chicago, Ill.
Filed Feb. 11, 1972, Ser. No. 225,552
Int. Cl. A47f *3/08*; **A47b** *81/00*
U.S. Cl. 312—136 **3 Claims**



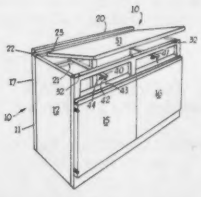
A display case having a housing and a transparent lid which can be locked in a closed position to preclude access to the housing interior. Mounted in the housing is a pair of laterally spaced-apart, generally parallel, elongated members. One of the members has a plurality of holes therein and the other member has a plurality of upwardly-open slots laterally aligned respectively with the holes. Finally, the case includes a plurality of article carriers each having two oppositely directed trunnions respectively loosely disposed in a hole and in an aligned slot, each article carrier having a handle protruding through an uncovered portion of the housing to enable pivoting of the carrier to view the articles thereon without gaining access to the interior of the housing.

3,784,270
MANICURE TABLE
Mary Eddy DeLapp, 5328 Chateau Dr., El Paso, Tex.
Filed Mar. 13, 1972, Ser. No. 234,142
Int. Cl. A47b *77/08*
U.S. Cl. 312—236 **1 Claim**



A table for use by a manicurist, and including a top member that is inclined upwardly from the customer's side. The top member has recessed cups therein for manicuring lotion, and such are heated by heating elements concealed beneath the top. The table has a tray, a drawer and a pair of cabinets on the rear or manicurist's side thereof, for the instruments and materials of the manicurist.

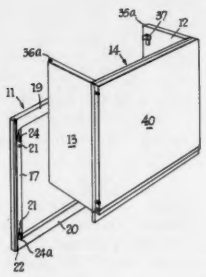
3,784,271
KITCHEN CABINETS
Chaim Samuel Schreiber, c/o Schreiber Furniture Limited, Harlow, England
Filed Aug. 28, 1972, Ser. No. 284,117
Claims priority, application Great Britain, June 22, 1972, 29,376/72
Int. Cl. A47f *5/08*
U.S. Cl. 312—257 R **6 Claims**



The back frame of a knock-down kitchen cabinet is provided with a horizontal abutment surface beneath which an edge of the top or working surface is inserted when positioned on the upper edges of the side panels and front frame. In a

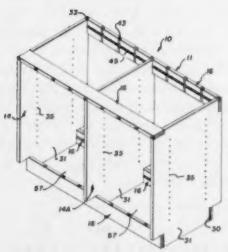
preferred form the abutment surface is the upper surface of a groove dimensioned to receive an edge of the top surface, the groove extending longitudinally of an upper, horizontal cross member of the back frame.

3,784,272
KITCHEN CABINETS
Chaim Samuel Schreiber, c/o Schreiber Furniture Limited, Harlow, England
Filed Aug. 28, 1972, Ser. No. 284,133
Claims priority, application Great Britain, June 22, 1972, 29,377/72
Int. Cl. A47f 5/08
U.S. Cl. 312—245 1 Claim



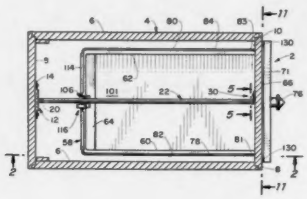
A wall-mounted cabinet the back of which is detachable and fixable to a wall or partition separately from the remainder of the cabinet. The detachable back has means engageable with other parts of the cabinet after the back has been fixed so that the cabinet can be built with the back in situ. In a preferred embodiment side panels and a front frame of the cabinet are assembled together before connecting the side panels to the wall-fixed back frame.

3,784,273
CABINET CONSTRUCTION
Gerhard Nikolai, 6080 Laurel St., Vancouver, B.C., Canada
Filed July 10, 1972, Ser. No. 269,951
Int. Cl. A47b 43/00
U.S. Cl. 312—257 SK 8 Claims



Prefabricated cabinet construction which can be shipped in knockdown form and assembled to provide a workbench of a predetermined length with storage compartments containing either drawers or shelves.

3,784,274
DRAWER AND SUPPORT SYSTEM
Frank Holmes, Buena Park; William A. Moore, West Los Angeles, and George Read, Glendora, all of Calif., assignors to Ajax Hardware Manufacturing Corp., City of Industry, Calif.
Filed Oct. 29, 1971, Ser. No. 193,661
Int. Cl. A47b 88/00
U.S. Cl. 312—330 42 Claims



A drawer of molded plastic construction in combination with alternative support systems, as well as alternative design of the front panel of the drawer, provides storage versatility meeting a myriad of end uses. The drawer has one of two front panelled configurations; in the first case being adapted to receive a wood or other material facade carrying a drawer pull and in the other instance having an integrally molded handle or pull facility to lend itself for other end uses. The drawer may be manufactured in several sizes, but the unique design of the drawer makes each of the drawers compatible with other drawers of the same size to make them nestable or stackable. The unique configuration of the drawer permits use of the drawer in structures defining oversize drawer receiving openings or, in more economical structures, permits the use of the drawers in spaced relationship utilizing only side supports therefor. The single drawer configuration with exception of the front panel, permits the drawer to be mounted wholly on conventionally found side channelled or guides and at the same time permits alternative mounting of the drawer on a single track or rail super-positioned over the drawer by the means of a simple bracket member carrying a wheel to engage the track and which is receivable by the rear wall of the drawer. In the latter installation, the drawer is self-closing and self-aligning.

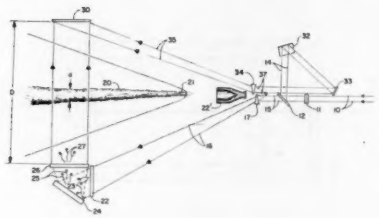
3,784,275
METHOD OF MANUFACTURING AN INCANDESCENT LAMP
Piet Wiedijk, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 18, 1972, Ser. No. 245,252
Claims priority, application Netherlands, Apr. 29, 1971, 7105839
Int. Cl. H01j 9/18
U.S. Cl. 316—19 4 Claims

An incandescent lamp which comprises phosphorus as a getter obtained by decomposition of phosphrus oxynitride (PON) in the lamp.

3,784,276
HOLOGRAPHIC APPARATUS FOR LARGE FIELD OF VIEW
Ralph F. Wuerker, Palos Verdes Estates, and Leo O. Heflinger, Torrance, both of Calif., assignors to TRW Inc., Redonda Beach, Calif.
Filed Oct. 16, 1972, Ser. No. 297,783
Int. Cl. G02b 27/00
U.S. Cl. 350—3.5 9 Claims

A holographic apparatus permitting holographing of an object in transmission to provide a viewing angle which may be

as large as substantially 180°. The apparatus is particularly suitable for taking holograms of aerodynamic phenomena such, for example, as a wake of a bullet or the perturbations created in a wind tunnel by a model plane. One form of the holocamera includes a lens for generating a virtual point source for a reference beam while the scene beam is projected



radially through the phenomenon to be recorded. Another embodiment makes use of a specially recorded hologram to diffract the reference beam onto a recording material so that the reference beam has a virtual point source along the axis of a wind tunnel or the like. This hologram serving as an optical element may be recorded in situ.

3,784,277

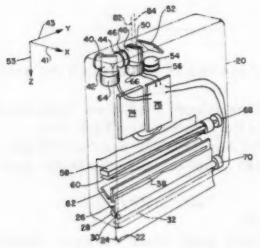
CORRECTED OPTICAL SYSTEM FOR SHALLOW CAMERA OR THE LIKE, COMPONENTS THEREOF

James G. Baker, Winchester, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 680,621, Nov. 6, 1967. This application Dec. 15, 1969, Ser. No. 889,788

Int. Cl. G02b *17/00*

U.S. Cl. 350—6 **4 Claims**



A corrected optical system is provided for a shallow camera that is characterized by an extremely short dimension between the forward position of the first refracting surface and the rearward position of the final image surface. In the compact hand-held camera illustrated herein as an example, the optical system is panoramic in operation, comprising (at one end of the camera) a pivotal scanning mirror and (at the other end of the camera) a slit, past which the photosensitive film is moved at a linear rate, with which the scanning mirror rate is synchronized in order to synthesize a complete image from a continuous sequence of increments.

3,784,278

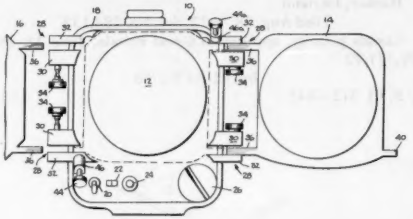
NIGHT VISION DEVICE WITH VIEWING ACCESSORIES

Alan Litman, Pittsburgh, Pa., assignor to General Ordnance Equipment Corporation, Pittsburgh, Pa.

Filed May 19, 1972, Ser. No. 254,972

Int. Cl. G02b *23/16*

U.S. Cl. 350—10 **1 Claim**



This invention relates to a passive night vision device fitted with interchangeable viewing accessories such as oculars and cameras for still photography, television, or cinematography.

3,784,279

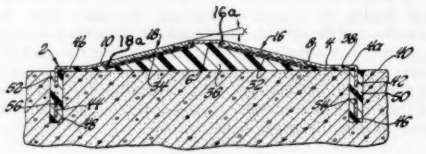
ROADWAY MARKER

Peter Hedgewick, Windsor, Ontario, Canada, assignor to Reflex Corporation of Canada Limited, Ontario, Canada

Filed May 1, 1972, Ser. No. 248,875The portion of the term of this patent subsequent to Dec. 14, 1988, has been disclaimed.

Int. Cl. G02b *5/12*

U.S. Cl. 350—103 **30 Claims**



A roadway marker comprising a metal housing having a base and a plurality of walls projecting from the base including a reflector supporting wall extending from the plane of the base at an angle less than fifteen degrees. An opening is formed in the reflector supporting wall, and a reflective insert of light transmitting synthetic resin is mounted in the housing with an outer surface extending across the opening and an inner surface formed with a plurality of cube corner reflex reflector elements. In order to increase the optical efficiency of the reflective insert, a sheet of flexible plastic material covers the inner surface of the reflective insert to protect the reflector elements from moisture and chemical attack and eliminate the necessity to metalize the reflector elements. The housing is filled with a mass of resin which contacts the plastic sheet on the side thereof opposite the reflector elements, the plastic sheet protecting the reflector elements from the resin filler to isolate the reflector elements from the resin to increase the optical efficiency.

3,784,280

LIGHT-DARK REFLECTIVE LIQUID CRYSTAL DISPLAY

John E. Bigelow, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

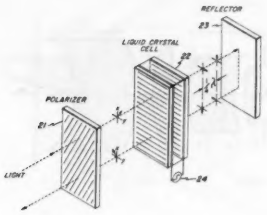
Filed Jan. 2, 1973, Ser. No. 320,466

Int. Cl. G02f *1/16*

U.S. Cl. 350—150 **5 Claims**

Described are light-dark contrasting displays comprising a liquid crystal cell including a nematic liquid crystal composi-

tion with a positive dielectric anisotropy having mutually parallel molecular alignment at opposing planar surfaces of the cell, an optical polarizer positioned on one side of the cell



and an optically reflecting member on the other side of the cell. Light-dark images are produced by controllably altering the molecular alignment of the liquid crystal composition in selected regions.

3,784,281

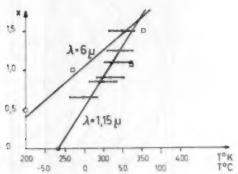
FERRIMAGNETIC GARNET CORRECTED FOR TEMPERATURE DEPENDENCE OF THE FARADAY EFFECT AND METHOD FOR MAKING THE SAME

Dieter Kuse, Niederrohrdorf, Switzerland, assignor to Brown Boveri & Company Limited, Baden, Switzerland

Division of Ser. No. 153,740, June 16, 1971, abandoned. This application Mar. 6, 1973, Ser. No. 338,632

Int. Cl. G02f *1/22*

U.S. Cl. 350—151 **4 Claims**



A ferrimagnetic garnet having the general composition $Y_{3-x}Gd_xFe_5O_{12}$ in which x has a value between 0 and 3 at which, for a given wavelength, the temperature dependence of the Faraday effect is corrected.

3,784,282

CORRECTING LENS USED TO FORM FLUORESCENT SCREENS OF COLOUR TELEVISION RECEIVING TUBES

Eiichi Yamazaki, Ichihara; Koichi Maruyama, and Toshio Ueda, both of Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

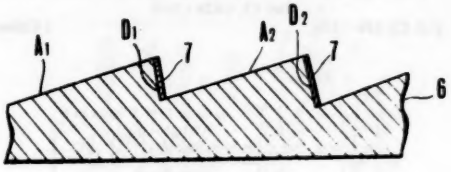
Filed Feb. 23, 1972, Ser. No. 228,639

Claims priority, application Japan, Mar. 5, 1971, 46/13665

Int. Cl. G02b *3/00*

U.S. Cl. 350—175 R **5 Claims**

In a correcting lens utilized to form the fluorescent screen of a colour television receiving tube, the lens being of the type wherein the effective surface of the lens through which the effective light beams pass is divided into a plurality of discontinuous effective regions of relatively small inclination angles with respect to the bottom surface of the lens and the adjacent effective regions are interconnected by connecting regions of larger inclination angles with respect to the bottom surface,



opaque or translucent films are applied to the connecting regions.

3,784,283

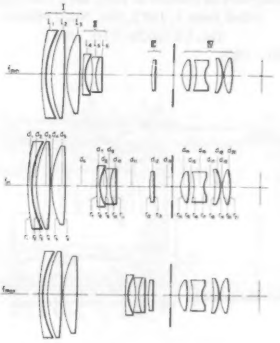
ZOOM LENS FOR SUPER-8 FILM

Trude Muszumanski, Vienna, and Helmut Gela, Maria-Enzersdorf, both of Austria, assignors to Karl Vockenhuber and Raimund Hauser, Vienna, Austria

Filed Apr. 14, 1971, Ser. No. 133,818

Int. Cl. G02b *15/16*

U.S. Cl. 350—184 **4 Claims**



A main lens unit having a fixed focal length and consisting of a positive lens member is preceded by an afocal forward lens unit having a variable magnification and consisting of a positive forward lens member, a negative intermediate lens member which is axially movable to change the magnification, and a positive rear lens member. The intermediate lens member is arranged to direct divergent bundles of rays to said rear lens member. The rear lens member is arranged to convert said divergent bundles of rays into bundles of rays which are substantially parallel to the optical axis of the lens and to direct them to said main lens unit. The forward lens member is axially movable to control the position of the image plane. The lens is designed to meet the condition

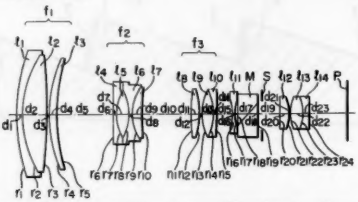
$$f_{min} - f_{II} < 6y$$

where f_{min} is the smallest focal length of the lens, f_{II} the focal length of the intermediate lens member, and $2y$ the image field diagonal.

3,784,284
ZOOM LENS SYSTEM FOR CLOSE UP PHOTOGRAPHY

Soichi Nakamura, Kamakura, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed July 22, 1971, Ser. No. 165,169
Claims priority, application Japan, July 25, 1970, 45/64707
Int. Cl. G02b 15/18
U.S. Cl. 350—186 1 Claim

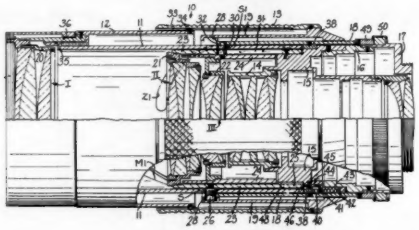


A zoom lens comprising a magnification varying system consisting of three lens groups of converging, diverging and converging types, respectively, at least one of the three lens groups being a focusing lens group, a relay lens disposed rearwardly of the magnification varying system and consisting of two lens groups. A stop and a beam splitter are both disposed between the two lens groups forming the relay lens, the third of the three lens groups in the magnification varying system being adapted to be individually advanced by a predetermined amount for its respective magnification varying positions, whereby an ultra-short shot can be accomplished.

3,784,285
ZOOM LENS

Rinzo Watanabe, and Masatoshi Shimojima, both of Tokyo, Japan, assignors to Ponder & Best, Inc., Los Angeles, Calif.

Filed June 1, 1972, Ser. No. 258,816
Int. Cl. G02b 7/10, 15/18
U.S. Cl. 350—187 16 Claims



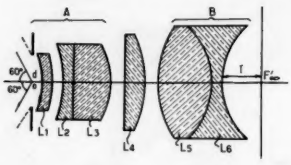
This disclosure relates to variable focal lens for a still camera having from front to rear a focusing group, a zooming group, a compensating group, and a fixed objective. In a zooming mode of operation, means are provided for moving the second and third groups in a first predetermined relation to vary the effective focal length of the lens system, while in a close focusing mode of operation means are provided for moving the second and third groups in a second predetermined relation for close-up focusing.

3,784,286
WIDE-ANGLE OBJECTIVE LENS

Raymond Andre Dudragne, 152 Boulevard Haussmann, Paris, France

Filed May 8, 1972, Ser. No. 251,359
Claims priority, application France, May 7, 1971, 7116725
Int. Cl. G02b 9/34
U.S. Cl. 350—220 4 Claims

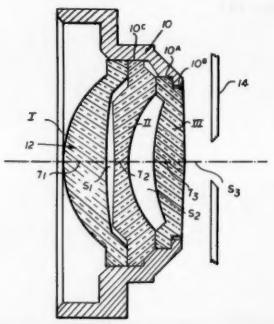
A wide-angle objective lens which provides good definition over a field of more than 120° at an aperture greater than 1/3.5, with a diaphragm placed outside the lens, the outer lenses being made of glass and the inner ones of plastic and protected from scratching. These lenses can be produced by moulding, polymerization or shaping. Their surfaces can be aspheric. The lens power of the inner lenses is O when they are spherical. The choice of curves for the lenses allows a higher degree of correction.



3,784,287
PLASTIC TRIPLET OBJECTIVE LENS SYSTEM

David S. Grey, Waltham, Mass., assignor to Berkey Photo, Inc., Clifton, N.J.

Filed Dec. 13, 1972, Ser. No. 314,724
Int. Cl. G02b 1/04, 9/16
U.S. Cl. 350—226 6 Claims



A three element f/5.6 objective lens system is adapted for use with still picture cameras. All three elements of the system are preferably constructed of plastic materials.

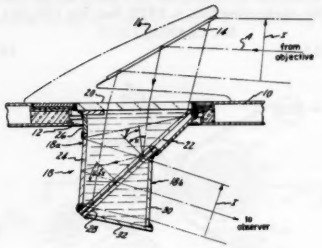
3,784,288
PERISCOPIC VIEWING SYSTEM

William W. Toy, 459 Henley Dr., Bloomfield Hills, Mich.

Filed Jan. 5, 1972, Ser. No. 215,498
Int. Cl. G02b 5/08
U.S. Cl. 350—302 29 Claims

A periscopic rear view optical system for vehicles in which an image of a rearward objective is reflected downwardly from a rooftop mirror through a prismatic device constructed as a transparently faced housing filled with a liquid suitable for the optical path to be within the critical angle at the desired reflective faces for reflection of the image to the driver of the

vehicle. A modification of the device includes adjustable prism faces to accommodate different driver heights, with the



spatial dimension variations produced by the adjustment effecting a vertical movement of the device.

3,784,289

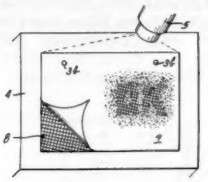
METHOD AND APPARATUS FOR HIDING AND VIEWING HALFTONE IMAGES

Ralph C. Wicker, Fairport, N.Y., assignor to American Bank Note Company, New York, N.Y.

Division of Ser. No. 856,663, Sept. 10, 1969, Pat. No. 3,675,948. This application July 26, 1971, Ser. No. 167,058

Int. Cl. G02b *27/00*

U.S. Cl. 350—321 **5 Claims**



A method of halftone printing is disclosed which permits an image to be disguised or hidden in a printed field from detection by ordinary photography or the eye of a viewer and an apparatus is presented which can be used to bring out or detect the hidden image. The printed field comprises three halftone components: an overall halftone at a given angle; a second halftone at a different angle and containing a negative of the image; and the image itself in halftone at a third angle and coincident with the negative portion of the second halftone. When each of the halftones is made up of dot figures of similar size, period and tone, the field will give a uniform appearance to the eye, obscuring the image and resisting photographic analysis except by impractical magnification.

3,784,290

DEFOCUSING DEVICE FOR OPTICAL SYSTEMS

Joseph Strobel, Roxheim, and Norbert Beisiegel, Traisen, both of Germany, assignors to Jos. Schneider & Co., Optische Werke, Bad Kreuznach, Germany

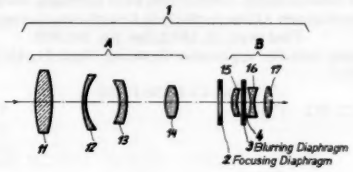
Filed May 24, 1972, Ser. No. 256,246

Claims priority, application Germany, May 26, 1971, P 21 26 131.4

Int. Cl. G03b *21/36*

U.S. Cl. 352—91 **5 Claims**

To produce a totally blurred image in the dissolution of a moving-picture scene, a camera objective of the varifocal type



is provided with an iris diaphragm whose leaves consist of light-scattering translucent material.

3,784,291

ELECTROMAGNETIC SHUTTER RELEASING DEVICE FOR A PHOTOGRAPHIC CAMERA

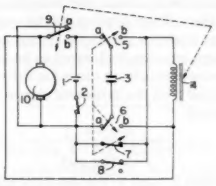
Noritsugu Hirata, Yokohama, and Tomoshi Takigawa, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

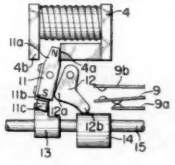
Filed Oct. 22, 1971, Ser. No. 191,609

Claims priority, application Japan, Oct. 23, 1970, 45/93807

Int. Cl. G03b *17/46*

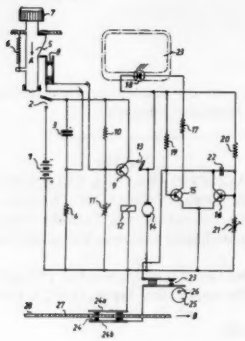
U.S. Cl. 352—169 **14 Claims**





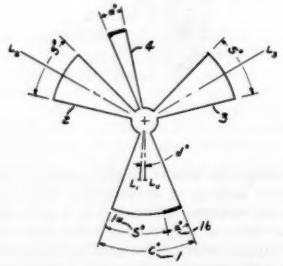
An electromagnetic shutter releasing device for a photographic camera utilizes, in combination with a permanent magnet, an electromagnet controlled by a pulse-like electric input to electromagnetically release a movable shutter blade from its normal stop position to a position for exposing a film. The polarity of the electric input to the electromagnet may be reversed so as to cause an interaction between the electromagnet and the permanent magnet and the resulting relative movement of the two magnets is detected to start and stop a shutter shaft drive motor. During a continuous shot, the drive motor may be maintained operative with the aid of the permanent magnet alone and without any electric input applied to the electromagnet.

3,784,292
BATTERY TEST ARRANGEMENT IN A MOTION PICTURE CAMERA
Alfred Winkler; Richard Pelte; Theodor Huber, all of Munich, and Helmut Mayr, Taufkirchen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Sept. 20, 1972, Ser. No. 290,995
Claims priority, application Germany, Sept. 21, 1971, P 21 47 073.5
Int. Cl. G03b *17/20*
U.S. Cl. 352—170 7 Claims



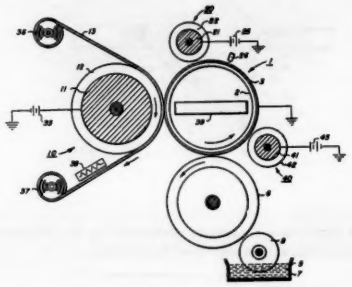
Connected in parallel with the electromotor driving the film transport is a threshold circuit which causes an indicator lamp to light when the voltage applied thereto is too low. A single switch connects both the threshold circuit and the electromotor to the battery, causing the battery to be tested under actual operation. Contacts which are closed at the end of the film can be interconnected with the threshold circuit to cause the lamp to light at film end.

3,784,293
NON-REGULAR FOUR BLADE SHUTTER
Eugene Li-Chun Yang, 710 W. Haven Dr., Arlington Heights, Ill.
Filed Jan. 4, 1973, Ser. No. 320,870
Int. Cl. G03b *9/10*
U.S. Cl. 352—208 2 Claims



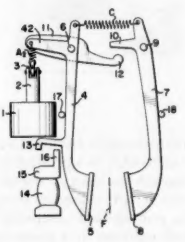
A non-regular four-blade shutter for motion picture projector which provides a composite of a two-blade shutter which gives maximum light and a three-blade shutter which provides minimum flicker. The present shutter transmits more light than a three-blade shutter without undesirable light modulation or flicker.

3,784,294
IMAGE DENSITY CONTROL
John B. Wells, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Division of Ser. No. 863,506, Oct. 3, 1969, Pat. No. 3,645,874.
This application Oct. 4, 1971, Ser. No. 186,537
Int. Cl. G03g *15/22*
U.S. Cl. 355—3 15 Claims



A photoelectrophoretic imaging apparatus comprising two additional electrodes for increasing the density and reducing background level of an image reproduced at high speeds.

3,784,295
PRESSURE PLATE MEANS FOR PROJECTORS AND THE LIKE
Takeshi Okano, Nishinomiya, Japan, assignor to Fuji Shashin Film Kabushiki Kaisha, Kanagawa-ken, Japan
Filed June 21, 1971, Ser. No. 154,952
Claims priority, application Japan, July 1, 1970, 45/65794
Int. Cl. G03b *1/48*
U.S. Cl. 353—95 9 Claims

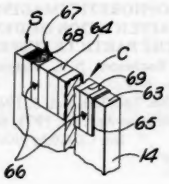


A pair of pressure plate members for clamping a film in the focal plane of a projector from both sides thereof are pivoted to one ends of a pair of levers for opening and closing operation. The two levers are operated by means of a solenoid in such a manner that one of them reaches the focal plane before the other one does.

3,784,296
CODING MEANS FOR PHOTOGRAPHIC SLIDE APPARATUS
Lon R. Davis, 11116 Cumpston St., North Hollywood, Calif.
Filed June 19, 1972, Ser. No. 263,816
Int. Cl. G03b *21/11, 23/04*
U.S. Cl. 353—120 5 Claims

Coding means are disclosed for use in cooperation with photographic slides and an automatic projection apparatus, whereby specific slides can be identified for selection and projection. As disclosed in one form, the coding means comprises

an adhesive tab that may be affixed either to an individual slide or to a slide magazine which carries a plurality of individual slides. The adhesive tab includes a flat base member, e.g., mylar film, with a reflective surface, carrying adhesive on one side for affixing the unit to a slide or magazine and also having adhesive on the opposed side to receive a plurality of



non-reflecting sheet members for selective removal to provide reflective elements of a desired code pattern. In other exemplary forms as disclosed herein, the code elements are carried by a clamp-on metallic sheet for individual slides, and are printed on the slide magazine or molded therein during initial fabrication.

3,784,297

PHOTOCOPYING MACHINE

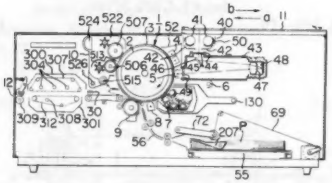
Yoshio Ito; Hajime Katayama; Hiroshi Nitanda, all of Tokyo, and Masaru Yamaguchi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1971, Ser. No. 120,132

Claims priority, application Japan, Mar. 11, 1970, 45/20075; Apr. 15, 1970, 45/32112

Int. Cl. G03g *15/08, 15/00*

U.S. Cl. 355—3 **7 Claims**



An electrophotographic copying machine of this invention has an original holder reciprocating on the upper surface of an electrophotographic photosensitive member which is rotatably fixed to the supporting device therefor. The charging device is arranged on one side of the photosensitive member. The copying machine further includes optical system for slit exposure, developing device, fixing device and cleaning device, which are arranged on the other side of the photosensitive member. Copy sheet feeding device, image transfer device are also arranged below the photosensitive member.

ERRATUM

For Class 355—41 see:
Patent No. 3,784,812

3,784,298

ROLL DUPLICATOR

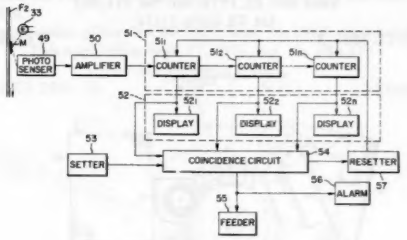
Mitsutoshi Kanayama, and Takao Toda, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1973, Ser. No. 336,379

Claims priority, application Japan, Mar. 3, 1972, 47/26402

Int. Cl. G03b *27/12*

U.S. Cl. 355—109 **5 Claims**



An improved roll duplicator is employed to continuously produce a predetermined number of copies from an endless original film by means of counting the number of an output signal of a photo-senser by a counter. The photosenser for generating the output signal in response to the reception of the light reflected back from a mark on the endless original film comprises a photo-electric cell having a large light intercepting surface. The counter has a plurality of first contacts and a movable contact which is stepped in response to an output signal from the photosenser. A presetting device comprises a switch having a plurality of second contacts each corresponding to each the plurality of first contacts. The transport of the endless original film and copy film is interrupted when the movable contact makes into contact with one of the first contacts corresponding to one of the second contacts which has been presetted.

3,784,299

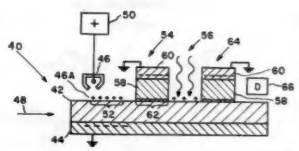
DARK DECAY RETARDATION

Arjan T. Manghirmalani, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Aug. 14, 1972, Ser. No. 280,366

Int. Cl. G03g *15/02*

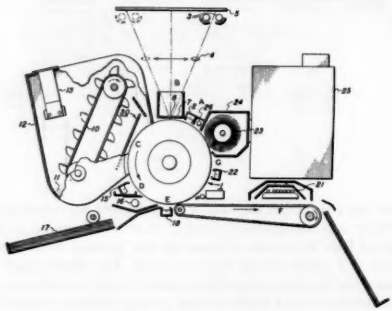
U.S. Cl. 355—3 **6 Claims**



The device described herein relates to a method and apparatus for reducing the dark decay rate of a photoreceptor surface. Disclosed is a method of reducing the dark decay rate of a photoreceptor surface by a set of steps reducing the internal field intensity causing reduction in a recombination of trapped diffused hole-electron pairs, including the steps of placing a charge of a first polarity on a surface of the photoreceptor thereby creating an internal field in the photoreceptor, and applying to the photoreceptor an opposite polarity field for maintaining the surface charge but reducing the internal field intensity and thereby reducing the dark decay. Apparatus for effecting reduction of dark decay as disclosed includes a means for inductively creating an oppositely charged field in conjunction with a critical segment of the photoreceptor surface or, alternatively, for placing a negative-

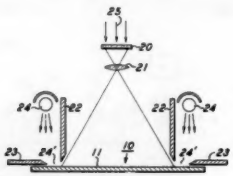
ly charged electrode adjacent the critical segment of the photoreceptor surface.

3,784,300
PRE-TRANSFER STATION
Frederick W. Hudson, West Henrietta, and John E. Cranch, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 23, 1971, Ser. No. 211,382
Int. Cl. G03g *13/14*
U.S. Cl. 355—3 **7 Claims**



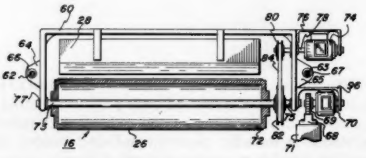
A pre-transfer station is provided in a reusable xerographic imaging system. The pre-transfer station includes a pre-transfer corotron and lamp arranged such that the exposure of the system xerographic plate is subsequent and not simultaneous with the pre-transfer corona charging.

3,784,301
ELECTROPHOTOGRAPHIC BORDER APPARATUS
Masamichi Sato, Asaka, Japan, assignor to Xerox Corporation, Stamford, Conn.
Filed Jan. 7, 1972, Ser. No. 216,004
Claims priority, application Japan, Sept. 3, 1970, 45/77456
Int. Cl. G03g *15/22*
U.S. Cl. 355—7 **5 Claims**



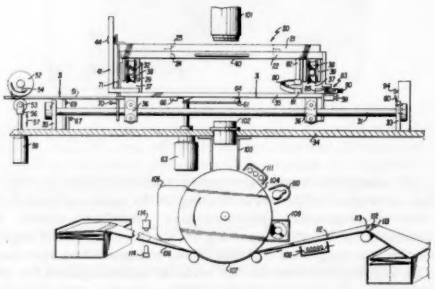
Apparatus for producing a toner-free border surrounding an image region on a charged photoconductive insulating layer comprising imagewise exposure means, electromagnetic radiation means for uniformly exposing the border portions of the photoconductive insulating layer and an electromagnetic radiation intercepting shielding plate positioned perpendicularly adjacent to the photoconductive insulating layer and a covering plate parallel and adjacent to the photoconductive insulating layer arranged to provide uniform exposure only on the desired width of the toner-free border sought while maintaining a charged surface surrounding and external to the desired toner-free border. Use of the apparatus in electrophotographic imaging results in a photoconductive insulating layer having an image region thereon, a uniformly exposed region surrounding the image region and a charged region surrounding the uniformly exposed region. Toner is thus attracted away from the intermediate, uniformly exposed region, and towards the image and charged regions on either side thereof. Upon transfer of the developing toner to a substrate, the substrate bears a toner-free border around the image region and corresponds to the uniformly exposed intermediate region of the photoconductive insulating layer.

3,784,302
ELECTROPHORETIC IMAGING APPARATUS INCLUDING APPLICATION OF DYNAMIC STRESS ON THE PARTICLE SUSPENSION
Edwin Zucker, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Division of Ser. No. 746,720, Oct. 3, 1968, Pat. No. 3,616,391.
This application Apr. 16, 1971, Ser. No. 134,902
Int. Cl. G03g *9/04*
U.S. Cl. 355—10 **8 Claims**



Method and apparatus for improving image density, contrast and quality and photographic speed in a photo-electrophoretic imaging system utilizing a particulate suspension for forming the image. The method and apparatus stresses an electrophoretic suspension of particles in a carrier on an electrode by applying forces across the image suspension during imaging through sliding motion between the electrodes.

3,784,303
AUTOMATIC MICROFICHE COPIER
William A. Sullivan, Jr., Webster, and Augustus W. Griswold, Rush, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed May 1, 1972, Ser. No. 249,232
Int. Cl. G03b *27/46*
U.S. Cl. 355—50 **13 Claims**

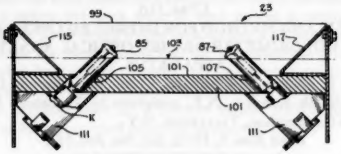


A microfiche copier automatically scans successive rows of microfiche frames and copies the scanned frames onto a fanfolded copy web, to produce a copy set which when bound on one edge provides a quasi duplex book form of copy of the successive frames. The scanning of successive microfiche frames is synchronized with the copy web to locate each frame on a separate panel of the fanfolded web.

3,784,304
PHOTOCOPYING MACHINE

Frank A. Babin, Chicago, and Kenneth E. Klein, Mount Prospect, both of Ill., assignors to SCM Corporation, New York, N.Y.

Division of Ser. No. 863,013, Sept. 26, 1969. This application Jan. 26, 1972, Ser. No. 220,921
Int. Cl. G03b 27/54
U.S. Cl. 355—67 **9 Claims**

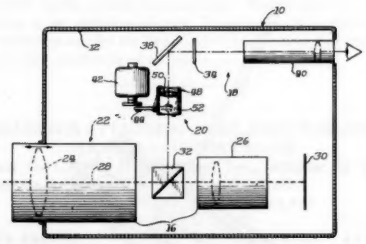


A photocopying machine produces a copy of a page of a bound book placed on a stationary window by moving an optical projection system past the window for projecting the images of successive elongated strip portions of the page onto a light-sensitive copy material. The portion of the page placed flat against the window is maximized by providing a downwardly extending wall adjacent an edge of the window to minimize the portion of the page adjacent the binding being pulled out of focus by the binding of the book. Movable past the window with the optical projection system is an illumination system for illuminating an elongated strip portion of the page for projection onto the light-sensitive copy material. The illumination system has a physical configuration substantially coextensive with the illuminated strip portion being projected onto the copy paper, and one end of the illumination system is substantially coextensive with the edge of the window adjacent the downwardly extending wall. The illumination system includes an elongated elliptical reflector having two single-ended tubular-shaped lamps extending obliquely through suitable openings in the reflector with two transverse reflectors at the opposite ends of the elongated elliptical reflector which extend transversely to the obliquely positioned lamps.

3,784,305
NODAL SLIDE RANGEFINDER

Rudolf Hartmann, Skokie, Ill., assignor to Bell & Howell Co., Chicago, Ill.

Filed Apr. 18, 1972, Ser. No. 245,220
Int. Cl. G01c 3/04
U.S. Cl. 356—3 **7 Claims**

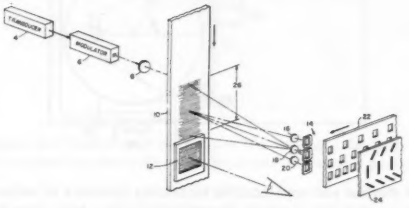


A ranging device for determining instrument-to-subject distance for focusing of an objective lens of the instrument on the subject. Located in the optical path of the objective lens, the ranging device includes a drive for cyclically displacing an optical means about the nodal point of that optical means to cause an image of the subject to remain stationary on an image plane when the objective is focused thereon and to cause the image to rotate in the image plane when the objective is not focused on the subject.

3,784,306
SIMULTANEOUS MULTIPLE STROBOSCOPIC INTERROGATION OF MEMORY

Fordyce E. Tuttle, deceased, late of Palm Beach, Fla., and by Eleanor Porter Tuttle, executrix, P.O. Box 908, Palm Beach, Fla.

Continuation of Ser. No. 861,509, Sept. 26, 1969, abandoned. This application Sept. 27, 1971, Ser. No. 184,171
Int. Cl. G01p 3/40
U.S. Cl. 356—23 **2 Claims**

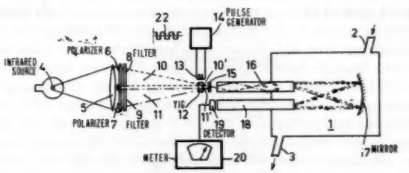


A method and apparatus for stroboscopic by interrogating information on a recording to quickly discern generally undistinguishable information. The recording has a high density of information packed therein. The recording is interrogated by a stroboscopic device that moves relative to the recording and that simultaneously strobes for a plurality of frequencies.

3,784,307
METHODS AND APPARATUS FOR DETERMINING THE RELATIVE AMOUNT OF SUBSTANCE PRESENT IN A TRANSPARENT MEDIUM

John Jackson, Haywards Heath, and Robert Fagan Donat Bradshaw, Markyate, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 16, 1970, Ser. No. 89,700
Claims priority, application Great Britain, Nov. 18, 1969, 56,362/69
Int. Cl. G01n 21/22
U.S. Cl. 356—51 **10 Claims**

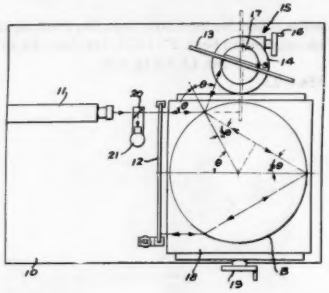


A method and apparatus for monitoring the presence of water vapor in helium features providing two narrow infrared frequency band within and outside a water vapor absorption band, alternately projecting the two bands of infrared radiation into the helium by using the polarization properties of the infrared radiation, and subsequently detecting the two infrared bands and comparing their amplitudes. Besides providing an accurate and reliable measurement, the invention is compact and requires no moving mechanical parts.

3,784,308
METHOD AND APPARATUS FOR MEASURING THE INDEX OF REFRACTION

William H. Southwell, Allison Park, and Richard M. Walters, Glenshaw, both of Pa., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 9, 1973, Ser. No. 331,055
Int. Cl. G01n 21/46
U.S. Cl. 356—128 12 Claims

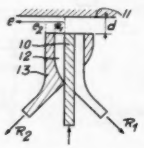


A method and apparatus for measuring the index of refraction of a cylindrical article of material wherein a beam of radiant energy is divided against a peripheral surface of said article at an acute angle to a tangent thereto, the article is moved relative to the beam in a direction transverse thereto until the transmitted light is autocollimated by a first mirror positioned with its plane at a right angle to the light beam, and thereafter a second mirror is moved until the light reflected from said article is autocollimated and the angular position of the second mirror is measured and the index of refraction is determined by the relationship $n = 2 \cos [(\frac{1}{2})\theta]$ wherein θ is the angle of incidence and $\pi - 2\theta$ is the angle of movement of the second mirror from a relationship wherein its reflective surface is perpendicular to said beam to the position wherein the reflected light is autocollimated.

3,784,309
OPTICAL COMPARATOR WITH INTEGRATED REFLECTIVITY COMPENSATION

Rene Brelot, Paris, and Jean Tourret, Montrouge, both of France, assignors to Compagnie Des Compteurs, Paris, France

Filed Aug. 5, 1971, Ser. No. 169,349
Claims priority, application France, Aug. 12, 1970, 7029725
Int. Cl. G01b 11/14
U.S. Cl. 356—156 4 Claims

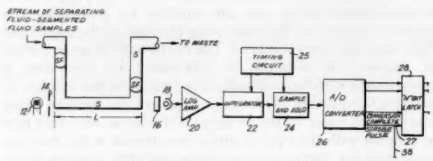


The variable relative distance d between the comparator and a test surface is measured by means of an optical system comprising a first glass-fiber bundle which directs a luminous flux to the surface and is surrounded by a second glass-fiber bundle which recieves the reflected flux and directs the flux to a receiver. The bundle of receiving fibers consists of three juxtaposed layers, namely a first layer which is adjacent to the emitting bundle and the fibers of which are directed towards a first receiver, a second intermediate layer in which 50 percent of the fibers are directed towards the first receiver and 50 percent of the fibers are directed towards a second receiver, and a third external layer of fibers directed towards the second receiver. The width of the intermediate layer is such that the value of d at which the signal of the first receiver is of maximum value is equal to the value of d at which the signal of the second receiver is located at the center at its linear range of variation.

3,784,310
SYSTEM AND METHOD FOR IMPROVED OPERATION OF A COLORIMETER OR LIKE OPTICAL ANALYSIS APPARATUS

Stephen P. Barton, New Milford, Conn., and Herman G. Diebler, North Haledon, N.J., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed June 7, 1972, Ser. No. 260,552
Int. Cl. G01j 3/46; G06g 7/00
U.S. Cl. 356—181 14 Claims

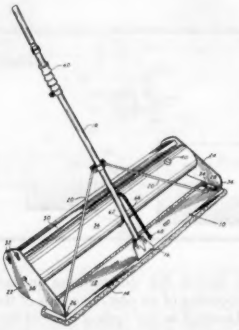


New and improved system and method for improved operation of a colorimeter or like device are provided and comprise the processing of the colorimeter output data in such manner that a separating fluid-segmented fluid sample stream may be passed through the colorimeter flow cell without adverse effect on said output data. This is accomplished by sampling said output data at periodic intervals and selecting for retention only that of the thusly sampled data which is known to have occurred when the flow cell sight path was filled with a fluid sample segment to the exclusion of the separating fluid segments.

3,784,311
LIQUID WAX DISPENSER

Jim E. Failing, 1302 Sixteenth Ave., Greeley, Colo.

Continuation-in-part of Ser. No. 218,181, Jan. 17, 1972, Pat. No. 3,729,268. This application July 21, 1972, Ser. No. 273,812
Int. Cl. A47l 13/26; B67d 5/64
U.S. Cl. 401—137 11 Claims



A liquid wax dispenser adapted to be mounted upon a floor type wax applicator. A cylindrical supply tank is rotatively

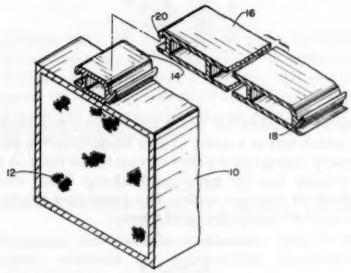
supported on a frame mounted on the applicator pad assembly in a horizontal position above and behind the applicator pad. An axially extending housing or manifold is mounted on the exterior of the tank and provided with a row of wax discharge openings, the interior of the housing or manifold communicating with the interior of the tank through offset bores in the tank wall to minimize splashing and achieve a steady flow of wax during the dispensing operation. The supply tank is rotatable about its axis between a non-operative position in which the housing or manifold is located above the tank axis and a gravity feed dispensing position in which the manifold is located below the tank axis. A vent system is provided for venting the head space in the tank during a dispensing operation. Both the vent system and the wax dispensing openings are sealed by a frame mounted resilient web type seal when the tank is in its non-dispensing position. Positioning of the tank is accomplished by a control system which includes a sleeve slidably mounted upon the applicator handle.

3,784,312

FLOTATION BEAM FOR MATTING CONSTRUCTION

Donald T. Gordon, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 12, 1972, Ser. No. 261,761
Int. Cl. B64f *1/00*
U.S. Cl. 404—35 **2 Claims**



Lightweight box beams filled with a plastic foam provide buoyancy for support matting in marshy or low bearing terrain. The beams have a substantially square or rectangular shaped cross section and connectors are placed on each beam to permit facile connection to other beams and to permit paneling to be attached thereto. Landing pads would be the most common use for the beams of this invention, but they can be used for a multitude of purposes.

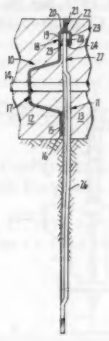
3,784,313

MEANS FOR ATTACHING A KEY-JOINT FORMING STRIP TO A SUPPORT STAKE

Thomas G. Collier, Jr., Houston, Tex., assignor to Burke Concrete Accessories, Inc., Burlingame, Calif.

Filed Apr. 13, 1972, Ser. No. 243,571
Int. Cl. E01c *11/04*
U.S. Cl. 404—51 **4 Claims**

A concrete slab key joint forming strip has an upper edge construction that includes a folded-over portion which extends downwardly in spaced, parallel relationship with the upper part of the forming strip and terminates in a lip which extends inwardly toward the upper portion of the forming strip. A stake for supporting the forming strip has outwardly and downwardly sloping protrusions provided adjacent the upper end thereof whereby the upper end of the stake will snap into engagement with the forming strip between the



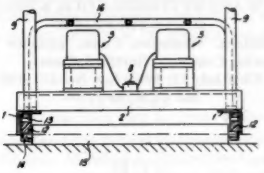
upper and folded-over portions of the strip and the strip will be retained on the stake by the lip on the folded-over portion.

3,784,314

TAMPING MACHINE FOR SETTING FLOOR COVERING TILES

Felix Ernst Durst, Oberweningen-Schofflisdorf, Switzerland

Filed Jan. 20, 1972, Ser. No. 219,332
Claims priority, application Switzerland, Feb. 2, 1971, 1515/71; July 9, 1971, 10103/71
Int. Cl. E01c *19/28*
U.S. Cl. 404—117 **18 Claims**

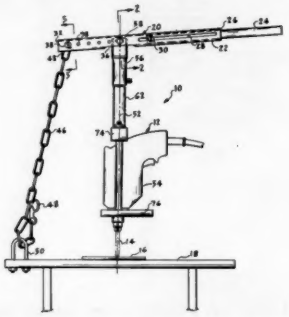


The tamping machine has a frame including rollers and vibrating means, and the frame includes two longitudinal beams interconnected by cross beams secured at their ends to the longitudinal beams. A respective bar of plastic composition material is interchangeably secured to each longitudinal frame beam and each bar has two vertically spaced rows of longitudinally spaced apertures serving as bearings for the rollers. The rollers are mounted in the lower row of apertures and, if a bar is damaged, it may be inverted so that the rollers can be rotatably mounted in the former upper row of apertures. The vibrating means comprises at least two parallel connected magnetic vibrators secured at central portions of the cross beams, and noise-reducing insulating material is associated with each vibrator. The cross beams are preferably inverted channels whose legs or flanges are secured to the longitudinal beams, and the longitudinal beams are preferably angles. The channels of the cross beams are preferably filled with a sound-absorbing material such as plastic foam. As a feature of the invention, an eccentric motor may be mounted on an intermediate cross beam with its axis extending parallel to the axes of the rotor, and one or more weights, which may be either units or multi-part weights, may be supported on the frame.

3,784,315
PORTABLE TOOL FOR DRILLING HOLES IN HARDENED STEEL

Eugene O'Brien, 5567 Wheeler St., Philadelphia, Pa.

Filed Mar. 9, 1972, Ser. No. 233,059
Int. Cl. B23b 45/14
U.S. Cl. 408—92 9 Claims

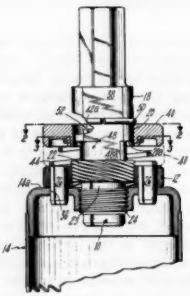


A portable tool for drilling holes in hard metal pieces, such as safe lock mounting plates, employing a high speed electric drill, a lever arm, a fulcrum at one end of the lever arm, means to adjustably attach the fulcrum to a support near the workpiece and means operatively connecting the lever arm at an intermediate position thereof to the drill body in such a manner that the force applied to the lever towards the workpiece is transmitted along the axis of the drill bit thus making it possible to drill a hole rapidly and with minimal effort and at various angular positions.

3,784,316
HOLE SAW AND REVERSIBLE QUICK DISCONNECT DRIVE THEREFOR

Joseph E. Bittern, Weatogue, Conn., assignor to Capewell Manufacturing Company, Hartford, Conn.

Filed July 12, 1972, Ser. No. 271,039
Int. Cl. B23b 51/04
U.S. Cl. 408—204 9 Claims

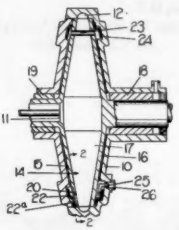


A hole saw equipped with a quick disconnect drive arbor having a pair of axially spaced threaded sections of opposite threaded direction with a non-locking included angle between the helices thereof of about 15°. A drive ring is mounted on the threads with the higher helix angle and a hole saw on the other threaded section. Rotation of the drive ring and hole saw in unison relative to the drive shaft in one direction causes the bottoming of the drive ring and the hole saw for transmitting torque. Reverse rotation quickly disconnects the hole saw from the arbor. To accommodate the use of the drive arbor with a reversible power unit, a locking ring having a non-circular aperture is slidably mounted around a mating portion of the arbor and is rotatable around a reduced cross section neck of the arbor to a locking position to prevent axial movement of the drive ring upon reverse rotation of the shaft. The neck of the arbor is provided with lobes forming stops to establish the locking and non-locking position of the lock ring. A compression spring frictionally engages the drive ring and the locking ring to resist relative rotation and to urge the locking ring away from the drive ring in the non-locking position thereof.

3,784,317
CENTRIFUGAL PUMPS

Geoffrey Arthur Lewis, Solihull, Warwickshire, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Oct. 26, 1971, Ser. No. 192,265
Claims priority, application Great Britain, Oct. 27, 1970, 50,877/70
Int. Cl. F04d 1/12
U.S. Cl. 415—144 7 Claims

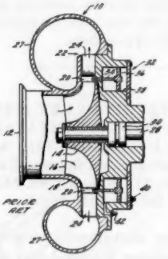


A centrifugal pump for liquid has its rotor provided with a groove which acts as a scoop to urge liquid from the periphery of the pump casing into a gutter carried by the rotor. A tubular scoop extends into the gutter to discharge liquid within the gutter from an auxiliary outlet. The pump may this be effectively purged of liquid when shut down.

3,784,318
VARIABLE DIFFUSER CENTRIFUGAL PUMP

Donald Y. Davis, Cincinnati, Ohio, assignor to General Electric Company

Filed Dec. 29, 1971, Ser. No. 213,417
Int. Cl. F04d 15/00, 29/46
U.S. Cl. 415—158 8 Claims



A centrifugal pump is supplied with a discharge shutter valve which provides a variable diffuser for the pump. The shutter valve includes a hollow, slotted cylinder positioned for movement into a variety of operative positions between the

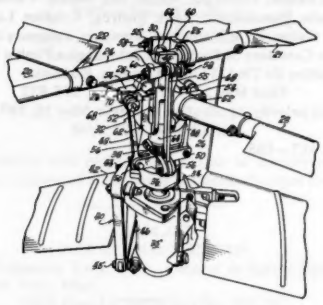
impeller and the diffuser vane passages. Each operative position completely closes one or more of the diffuser passages while leaving the remaining passages completely open, thereby providing a pump with high head rise over the complete operating range of the pump.

3,784,319

CORIOLIS-RELIEVING AIRCRAFT ROTOR ASSEMBLY

Kenneth B. Amer, Los Angeles, and Howard T. Lund, Playa Del Ray, both of Calif., assignors to Summa Corporation, Culver City, Calif.

Filed Apr. 17, 1972, Ser. No. 244,427
Int. Cl. B64c *27/52*
U.S. Cl. 416—135 **13 Claims**



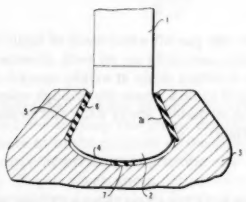
In a multiple blade tail rotor of a helicopter, cyclic Coriolis forces are cushioned by resilient stress-absorbing means interposed between the engine output member and the pairs of trunnions on the teetering axes of the blade hubs to permit the pairs of trunnions to oscillate relative to each other and relative to the engine output member.

3,784,320

METHOD AND MEANS FOR RETAINING CERAMIC TURBINE BLADES

Axel Rossmann, and Wilhelm Hoffmuller, both of Munich, Germany, assignors to Motoren-Und Turbinen-Union, Munich, Germany

Filed Feb. 22, 1972, Ser. No. 227,809
Claims priority, application Germany, Feb. 20, 1971, P 21 08 176.5
Int. Cl. F01d *5/30*
U.S. Cl. 416—215 **20 Claims**



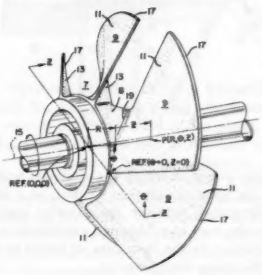
A method and means for retaining ceramic turbine blades in steel rotors using metallic felt shims interposed between the edges of the blade root and side walls of a slot formed in the rotor. The metallic felt shims are formed of very thin metallic fibers sintered together to form a thin sheet of felt material. This sintered felt sheet is then compressed beyond its first plastic limit, at which point it again becomes elastic, exhibiting favorable elastic properties for absorbing the relatively large rotative and centrifugal forces between the rotor and blade during use. Since the force between blade and rotor transfer is almost exclusively through elastic deformation of the shim means, the friction coefficients between the shim and rotor or blade structure need not be precisely controlled. The shim is fixed to the rotor structure by brazing or the like. The predeformed metal felt material also acts as a heat insulator to prevent or inhibit the transfer of high blade temperatures and heat to the rotor.

3,784,321

PUMP IMPELLERS

Fred T. Woell, Jr., Little Rock, Ark., assignor to Jacuzzi Bros. Incorporated

Filed Dec. 15, 1972, Ser. No. 315,296
Int. Cl. F04d *29/38*
U.S. Cl. 416—223 **2 Claims**



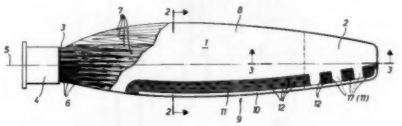
An impeller blank of conventional design, has its blade geometry altered by trial and error to create a blank of substantially higher efficiency and one which can be trimmed to meet a wider range of power requirements without any material change in such higher efficiency. The physical requirements of the new blank are defined in the specification by empirical formulae.

3,784,322

PROPELLER BLADE

Reinhard Erich; Hermann, both of Hoffmann, Degerndorf/Inn, and Gerd Rudiger Muhlbauer, Rosenheim/Upper Bavania, both of Germany, assignors to Firma Hoffmann GmbH & Co., KG., Rosenheim/Obb., Germany

Filed Jan. 14, 1972, Ser. No. 217,747
Claims priority, application Germany, Jan. 25, 1971, G 71 02 599.5
Int. Cl. B64c *11/26*
U.S. Cl. 416—229 **13 Claims**



A propeller blade of the kind having a light wood body, a root of harder wood, and a metal ferrule connecting the root to the propeller hub, is reduced in bulk without loss in mechanical strength or efficiency by using a special wood/resin lamination for the root and covering the whole of the body with a skin composed of a resin reinforced by one or more layers of fiber, e.g., woven glass fiber fabric. The appli-

cation of a metal protection to the leading edge of the blade and the retention of this protection are also assisted by the aforesaid skin, and special forms of screw for anchoring the blade root to the ferrule, and special forms of ferrule, are also proposed.

3,784,323

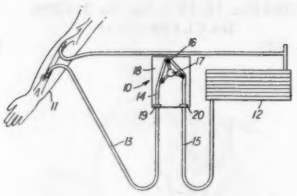
PERISTALTIC PUMP

Andre Sausse, Sceaux, France, assignor to Phone-Poulenc S.A., Paris, France

Continuation of Ser. No. 83,305, Oct. 23, 1970, abandoned. This application Nov. 9, 1972, Ser. No. 304,975

Int. Cl. F04b *43/08, 43/12, 45/06*

U.S. Cl. 417—53 **2 Claims**



A peristaltic pump in which the material and thickness of the wall of the tube are chosen so that, at a predetermined pressure differential, between the exterior and interior, collapse of the tube wall to a flattened condition occurs, thereby causing restriction in the flow rate of liquid in the tube as a function of the pump inlet pressure.

3,784,324

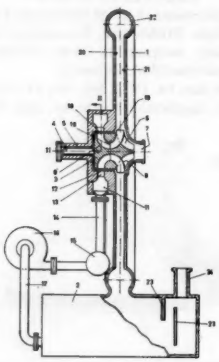
CENTRIFUGAL FLUID VANES COMPRESSOR

Pieter Van Staveren, Pijnacker, Netherlands, assignor to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Ondersoik Ten Behoeve Van Nijverheid, Handel En Verkeer, The Hague, Netherlands

Filed Mar. 31, 1971, Ser. No. 129,803

Int. Cl. F04f *11/00*

U.S. Cl. 417—67 **2 Claims**



A centrifugal fluid vanes compressor for compressing an effluvium is described, which comprises a compression chamber bounded by two parallel walls between which the fluid vanes are rotating, which vanes are formed by a flowing fluid which emerges at a high velocity through jet openings in a rapidly rotating driven rotor.

The compressed effluvium is discharged and the fluid of the fluid vanes is collected in a fluid reservoir and recycled via a pump.

An improved fluid vanes compressor is described in which the fluid entrance opening of the rotor is situated substantially in the same circumferential plane of the rotor as the discharge openings of the jets.

As a result of these measures the relative rate of discharge of the fluid from the jet openings is substantially equal or little lower than the local circumferential speed of the rotor which results in a considerable improvement in efficiency.

3,784,325

METHOD OF AND APPARATUS FOR THE GAS-LIFT WITHDRAWAL OF A LIQUID FROM A SUBTERRANEAN SPACE

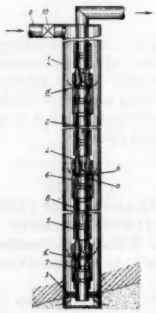
Henry Coanda; Gheorghe Aldea; Ion Bodea; Vasile Truica; Valentin Hanciulescu; Radu Posirca; Cristian Lazar, and Iacob Gabor, all of Bucharest, Romania, assignors to Institutul De Cercetare Si Proiectare Tehnologica Pentru Industria Extractive De Titei Si Gaza, Cimpina, Romania

Filed May 22, 1972, Ser. No. 255,822

Claims priority, application Romania, May 28, 1971, 67059

Int. Cl. F04f *5/22, 5/48*

U.S. Cl. 417—165 **2 Claims**



A system for the gas-lift withdrawal of liquid from a subterranean location, especially an oil well, wherein the gas is introduced into a tubing drain at axially spaced circular slot to induce the liquid to flow upwardly through respective venturi-type nozzles immediately above each slot in accordance with the Coanda effect.

3,784,326

PRESSURE COMPENSATED PUMP

Joseph A. Lagana, Meriden, and John E. Cygnor, Middletown, both of Conn., assignors to Chandler Evans Inc., West Hartford, Conn.

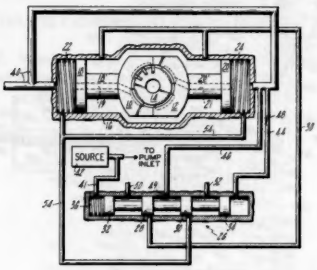
Filed Jan. 24, 1972, Ser. No. 220,042

Int. Cl. F04b *1/06;* **F01c** *21/16;* **F03c** *3/00*

U.S. Cl. 417—221 **9 Claims**

A constant pressure fluid source is provided by operating a balanced variable displacement vane pump as a pressure compensated device. The pressure differential across the pump is

sensed and employed to hydraulically and automatically control pump displacement by adjusting the position of the mova-



ble seal blocks with respect to the rotor to thereby regulate flow in the interest of maintaining the desired output pressure.

3,784,327

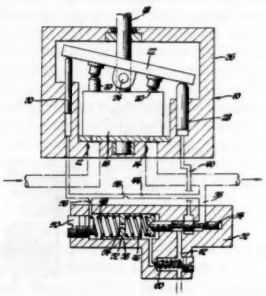
POWER TRANSMISSION

Kurt R. Lonnemo, Troy, Mich., assignor to Sperry Rand Corporation, Troy, Mich.

Filed June 13, 1972, Ser. No. 262,397

Int. Cl. F04b *1/26, 49/00*

U.S. Cl. 417—222 **4 Claims**



A pressure regulated variable delivery hydraulic pump includes a control for varying the pump displacement which responds not only to outlet pressure of the pump, but also to the rate of change of pressure and to the rate of change of pump delivery. Regulation is by outlet pressure opposed by two springs in back-to-back relation with a dashpot intermediate the two springs which retards rapid movements of one spring in backing up the other. The dashpot action is further modified by a feedback responsive to the rate of change of pump displacement. This is derived from pressure differentials generated by flow in the displacement varying servomotor system. The result is a servocontrol system which has high gain characteristics for small transients and lower gain for large transients and an increased damping ratio with a reduction in overshoots of pressure transients.

3,784,328

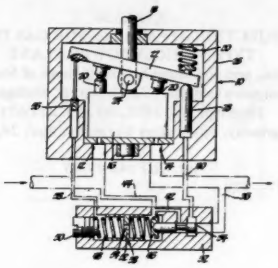
POWER TRANSMISSION

Nicholas F. Pedersen, Farmington, Mich., assignor to Sperry Rand Corporation, Troy, Mich.

Filed June 13, 1972, Ser. No. 262,398

Int. Cl. F04b *1/26*

U.S. Cl. 417—222 **8 Claims**



A pressure regulated variable delivery hydraulic pump includes a control for varying the pump displacement which responds not only to outlet pressure of the pump, but also to the rate of change of pressure and to the rate of change of pump delivery. Regulation is by outlet pressure opposed by two springs in back-to-back relation with a dashpot intermediate the two springs which retards rapid movements of one spring in backing up the other. The dashpot action is further modified by a feedback responsive to the rate of change of pump displacement. The result is a servocontrol system which has high gain characteristics for small transients and lower gain for large transients and an increased damping ratio with a reduction in overshoots of pressure transients.

3,784,329

FUEL SUPPLY ARRANGEMENTS FOR GAS TURBINE ENGINES

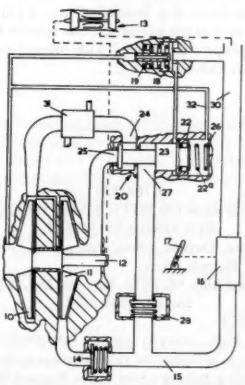
Alan Arthur Crawley, Bromsgrove, England, assignor to Lucas Aerospace Limited, Birmingham, England

Filed Dec. 29, 1972, Ser. No. 319,645

Claims priority, application Great Britain, Jan. 29, 1972, 4,311/72

Int. Cl. F04c *23/00*

U.S. Cl. 417—252 **4 Claims**



A fuel supply arrangement for a gas turbine engine comprises a pair of centrifugal fuel pumps and a fuel control apparatus downstream of the pumps. A valve is responsive to the

fuel pressure downstream of the control apparatus to connect said pumps in series or to cause the fuel flow to be provided by one of the pumps.

3,784,330

FUEL INJECTION APPARATUS FOR GAS TURBINE-TYPE VEHICLE POWER PLANT

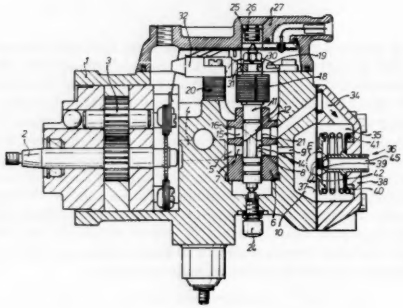
Franz Eheim, and Reinhard Schwartz, both of Stuttgart, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 17, 1972, Ser. No. 244,671

Claims priority, application Germany, Apr. 24, 1971, P 21 20 112.7

Int. Cl. F04b *49/08*

U.S. Cl. 417—279 **4 Claims**



In a fuel injection apparatus of the type that is associated with a gas turbine-type vehicle power plant, there is provided a differential pressure valve which is disposed in the fuel path and which ensures a constant pressure drop across a fuel metering valve regardless of the fuel quantities metered thereby. In order to reduce the back pressure effect of the fuel on the operation of the differential pressure valve, the stationary flat valve seat of the latter has, instead of one, a plurality of fuel flow openings, so that the pressure cross section for any given opening cross section is reduced with respect to known differential pressure valves.

3,784,331

RADIAL COMPRESSOR WITH TWO-PIECE CYLINDER HOUSING AND SHELL

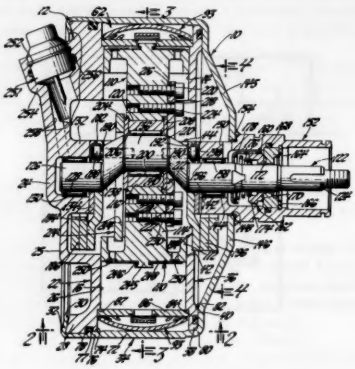
John H. Heidorn, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 18, 1972, Ser. No. 254,511

Int. Cl. F04b *1/04*

U.S. Cl. 417—273 **11 Claims**

A compact high capacity rotary refrigerant compressor suitable for use in automotive refrigeration systems including a cylinder housing having cross bores formed therein. Front and rear cylinder walls support a circumferentially located sheet metal shell sealed to form a continuously circumferential high pressure discharge space with enlarged discharge muffler cavities. A short shaft and bearing assembly is formed between the front and rear walls to reduce compressor length. The sheet metal shell and cylinder housing form a sealed suction cavity located centrally of the sealed discharge space.



3,784,332

PORTIONING DEVICE FOR DOUGHY MATERIAL

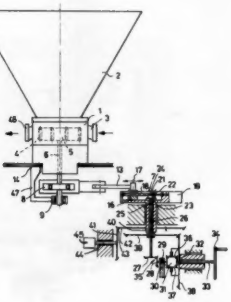
Karl Schnell, Karlstrasse 7065, Winterbach, Germany

Filed May 3, 1971, Ser. No. 139,605

Claims priority, application Germany, May 12, 1970, P 20 23 034.6

Int. Cl. F04b *9/02*

U.S. Cl. 417—319 **8 Claims**



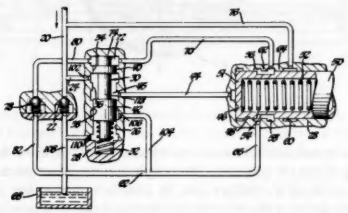
A hopper supplies doughy material to a rotary gear pump which may also be supplied with liquid, and the rotary gear pump pumps the supplied material through an outlet. A constantly rotating crank mechanism drives the pump through a driving mechanism including two one-way clutches or freewheeling devices, arranged to permit rotation in respective opposite directions. One one-way clutch allows driving of the gear pump in only one direction, and the other one-way clutch is interposed between the pump drive shaft and a fixed portion of the device to prevent reverse rotation and backlash of the pump. A connecting rod included in the crank mechanism is connected to a slide which is radially adjustable of a constantly rotating crank disk, and the position of the slide is adjustable by a threaded spindle which is driven, through bevel gearing, by a shaft extending through a tubular drive shaft for the crank disk. A differential gearing is interposed between the tubular shaft and the drive shaft for the threaded spindle,

and is adjustable by a manually operable adjusting wheel to set the magnitude of the portions delivered by the pump during each stroke of the crank mechanism.

3,784,333
PISTON AIR COMPRESSOR FOR AIR ASSIST SHOCK ABSORBER

James E. Whelan, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 12, 1972, Ser. No. 262,086
Int. Cl. F04b *9/10*; **F01l** *25/04*; **F04b** *35/02*
U.S. Cl. 417—383 **3 Claims**



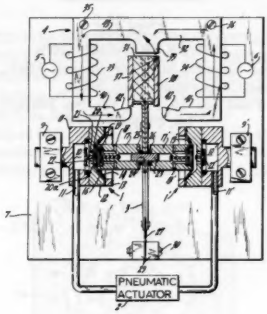
A fluid control system for a diaphragm type air compressor including a spring biased shuttle valve rapidly moved between a first position supplying pressurized fluid to the diaphragm and a second position exhausting the fluid from the diaphragm for intermittently actuating the diaphragm to compress air. The shuttle valve is spring biased to a first position and is moved against the spring to a second position intermittently directing the pressurized fluid against one end of a spring biased piston which in turn pumps fluid against one side of the air compressing diaphragm. Valve means are associated with the piston and are responsive to movement thereof to direct the pressurized fluid against one end of the shuttle valve maintaining it in the second position while the pressurized fluid is exhausted from the cylinder containing the diaphragm actuating piston and its spring then returns the shuttle to the first position. The fluid control system of this invention automatically applies the pressurized fluid to the piston to rapidly pulse the diaphragm thereby providing a source of compressed air.

3,784,334
ELECTROMAGNETICALLY DRIVEN FLUID COMPRESSING APPARATUS

Adolph J. Hilgert, Mequon, Wis., assignor to Johnson Service company, Milwaukee, Wis.

Filed Apr. 3, 1972, Ser. No. 240,718
Int. Cl. F04b *35/04*
U.S. Cl. 417—415 **11 Claims**

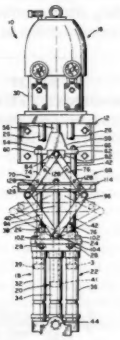
A pneumatic supply includes a permanent magnet mounted to the upper end of a driven lever. An encircling rectangular member has an opening through which the lever extends to locate the permanent magnet generally centrally of the encircling magnetic frame. Coils are wound and oriented on the second frame to establish a pair of alternating current fields within the frame with corresponding polarity with respect to the permanent magnet to create oppositely directed driving forces on the permanent magnet in synchronism with the alternate polarities, thereby causing the permanent magnet to oscillate. Pole shoes are provided on opposite sides of the permanent magnet to concentrate and direct the flux. A pair of diaphragm type air compressors, each of which includes an operating piston aligned with and located to the opposite sides of the lever. The piston members are connected to each other and to the lever for simultaneous opposite corresponding directional movement. The reciprocating motion of the electromagnetic drive unit results in the opposite actuation of the compressors; the outputs of which are interconnected to a common pressure load.



3,784,335
PROPORTIONING PUMP

James C. Cevera, c/o IRC Corporation, 1363 E. 286th St., Wickliffe, Ohio

Filed Dec. 13, 1971, Ser. No. 207,123
Int. Cl. F04b *1/00*
U.S. Cl. 417—539 **13 Claims**



A proportional displacement mechanism is disclosed for imparting proportional strokes to the piston rods of a plurality of pump units. A stroke of a first length is imparted to the piston rod of at least one pump unit by reciprocable drive means connected directly to the piston rod, and a stroke of a proportional length is imparted to the piston rod of another pump unit through linkage means interconnected between the drive means and the latter piston rod. The piston rods of the pump units are reciprocable relative to fixed support means, and the linkage means is in the form of a parallelogram of link elements pivotally connected at one point to the drive means and at another point to the support means. The piston rod of the second pump unit carries a cam track component which extends transverse to the axis of the piston rod, and an adjacent pair of the link elements carry cam elements which cooperatively engage the cam track means. In response to reciprocating motion of the drive means, the link elements of the parallelogram linkage means are displaced in a manner whereby the cam elements displace the cam track means and ac-

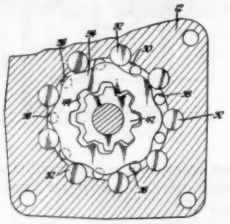
cordingly the piston rod of the second pump unit in the direction of movement of the drive means and a distance proportional to the movement of the drive means.

3,784,336

POWER TRANSMISSION

Richard Allen Schultz, St. Clair Shores, Mich., assignor to Sperry Rand Corporation, Troy, Mich.

Filed Dec. 10, 1971, Ser. No. 206,845
Int. Cl. F01c *1/22*
U.S. Cl. 418—61 1 Claim



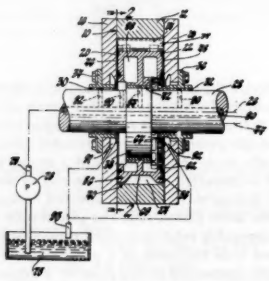
An orbital or compound displacement fluid motor has an internally lobed stator and an externally lobed rotor-orbitor with one lobe less than the number of lobes on the stator. An output shaft is journalled in the housing coaxially with the stator and a driving connection from the rotor-orbitor is provided by a single, very loose fitting spline drive providing direct driving contact from the rotor-orbitor to the shaft. This avoids the use of the inclined coupling shaft commonly used in orbital motors and provides greater durability at a lower production cost.

3,784,337

OIL SEAL ARRANGEMENT FOR ROTARY ENGINE

John G. Sebring, Arcanum, and Thomas C. Downs, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 6, 1972, Ser. No. 304,135
Int. Cl. F01c *19/08*
U.S. Cl. 418—142 3 Claims



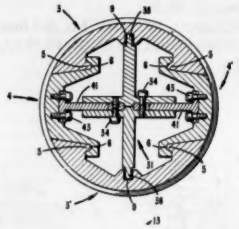
An oil seal arrangement for a rotary engine having a spring seal mounted on the engine's rotor that maintains sealing engagement with one of the engine's inner end walls and in addition an elastic seal mounted on the rotor that maintains sealing engagement with the spring seal and the rotor.

3,784,338

EXPANSIBLE SECTOR CORE FOR CURING BELTS

Augusto Previati, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Apr. 9, 1971, Ser. No. 132,687
Claims priority, application Italy, Apr. 9, 1970, 23080 A/70
Int. Cl. B29d *29/00*; B29h *5/18, 7/22*
U.S. Cl. 425—28 6 Claims



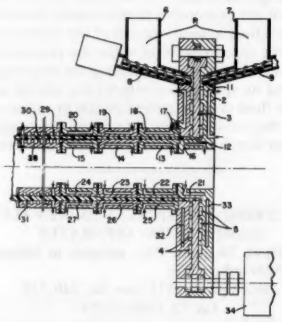
The invention relates to an expansible type core for a belt curing mold. A plurality of complementary sectors are interfitted to form a cylinder and, in addition, means are provided for interlocking the sectors in expanded position against either axial or radial displacement relative to each other. Further, the sectors are expansible symmetrically relative to the core axis.

3,784,339

DISK EXTRUDER

Artur Springfeld, Munich, Germany, assignor to Kunststoffwerk Gebruder Anger GmbH, Munich, Germany

Filed Dec. 21, 1971, Ser. No. 210,354
Int. Cl. B29f *3/00*
U.S. Cl. 425—133 8 Claims



A disk extruder comprises a pair of spaced stators each having a spiral channel on its inner face and a disk-shaped rotor is rotatably mounted between the spiral channels and closely positioned to the channels so that rotation of the rotor moves a plastic molding material along the spiral channel. One stator has a central opening defining a nozzle and a cylindrical core on the other stator extends into the nozzle to define an annular gap. Hollow cylindrical sections can be attached to the outer face of the stator to extend the annular gap and a temperature controlling medium may be circulated through the sections. A cylindrical extension on the rotor is positioned within the gap and separates the plastic material flowing from each stator until this molding material reaches the cooling sections whereby a multi-ply tubular member is formed.

3,784,340

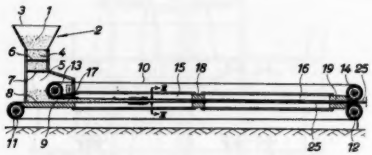
MACHINE FOR CONTINUOUS MANUFACTURING OF CHIP BOARDS

Into Isak Kerttula, Luotsikatu 16B, and Per Arno Jaatinen, Vaskisepankija 4B, both of Helsinki, Finland

Filed Aug. 15, 1972, Ser. No. 280,854

Claims priority, application Finland, Aug. 16, 1971, 2278/71

Int. Cl. B29c *3/06*; **B29j** *5/00*

U.S. Cl. 425—141 **6 Claims**

Machine for continuous manufacturing of chip boards, consisting of a strewing station for strewing chips to form a mat on a moving surface and a continuous action press for pressing the chip mat in the press gap between two moving surfaces, at least one of which consists of an endless belt, most appropriately a steel band, which is loaded by the aid of a pressure chamber to be urged in direction against the chip mat. The chip strewing station has been formed to constitute a chamber provided with a closable feed opening, which chamber directly communicates with the press gap provided with marginal seals and into which chamber pressure fluid can be introduced under a pressure which at the most equals the pressure prevailing in the pressure chamber.

3,784,341

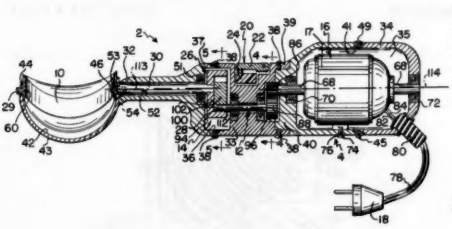
HAND TOOL FOR DISPENSING FROZEN FOOD ITEMS

Thomas D. Magalotti, 4371 Ammon Rd., Lyndhurst, Ohio, and Ernest August, deceased, late of South Euclid, Ohio (by Eleanor J. August, executrix)

Continuation-in-part of Ser. No. 883,784, Jan. 28, 1970, abandoned. This application Apr. 6, 1972, Ser. No. 241,748

Int. Cl. A23g *5/02*

U.S. Cl. 425—280 **8 Claims**



A food dispensing tool including an elongated body having a hollow semi-spherical scoop member adjacent one end and a handle portion adjacent the opposite end. The scoop member includes a circular endless peripheral edge defining an opening therefor. A semi-circular blade is mounted for oscillatory movement within the scoop member being defined by opposed, laterally extending cutting edges positionable adjacent opposed portions of the peripheral edge of the scoop member. A power means including a rotatable shaft is operably connected to the cutter blade. Rotation limiting means is connected between the cutter blade and shaft for converting rotary movement of the shaft to oscillatory movement of the cutting blade for alternately positioning the cutting edges in cutting relation adjacent the opposed portions of the peripheral edge of the scoop member.

3,784,342

APPARATUS FOR DEEP DRAWINGS CONTAINERS OF THERMOPLASTIC FILM MATERIAL

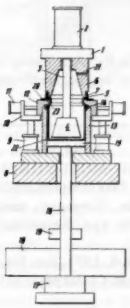
Horst Merklinghaus, Hilchenbach-Allenbach, Germany, assignor to Tedeco, N.V., Deventer, Netherlands and Tedeco Verpackung G.m.b.H., Hamburg, Germany

Continuation of Ser. No. 61,361, Aug. 5, 1970, abandoned. This application Aug. 16, 1972, Ser. No. 280,975

Claims priority, application Germany, Aug. 6, 1969, P 19 39 872.2

Int. Cl. B29c *3/00*

U.S. Cl. 425—292 **5 Claims**



An apparatus of forming containers of thermoplastic film material, said containers having back-cut portions, said apparatus comprising the means of maintaining the film material preheated into the plasticized range stressed over the opening of a mold means and of urging it into said mold means after a mechanical prestretching by a pneumatic pressurizing against the walls of said mold means until the solidification thereof, the margin of the molded article being severed to the desired dimension and said mold means divided in longitudinal direction being opened for the removal thereof, said apparatus being characterized by the fact that said mold means is opened only within the region having the back-cut portions and a region at least uninterrupted on its circumference being moved along the molded article toward a cutting plate for severing.

3,784,343

BRICK PRESS WITH MEANS FOR WITHDRAWING AIR FROM BRICK RAW MATERIAL

Shigeo Iwasaki, Okayama, Japan, assignor to Mitsuishi Fukai Tekkosho, Ltd., Wakegun, Okayama Prefecture, Japan

Filed Jan. 25, 1972, Ser. No. 220,626

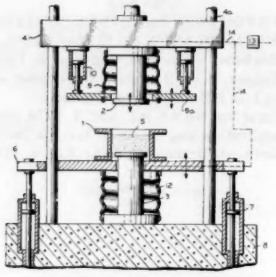
Claims priority, application Japan, June 12, 1970, 45/50795

Int. Cl. B29c *3/00*

U.S. Cl. 425—352 **1 Claim**

A lower fixed frame has a lower fixed piston thereon. An upper movable frame has thereon an upper movable piston adapted to be moved toward and away from the lower frame such that the upper and lower pistons oppose each other. A mold having a cross-section corresponding to that of the pistons is positioned to support brick raw material between the upper and lower pistons. A pair of bellows surround the upper and lower pistons in an air tight manner. The upper bellows has its lower end connected to a plate which is supported by servo-cylinders. An air tight ring is fixed to the bottom of

the plate and is adapted to create an air tight seal with the top of the mold when the servo-cylinders are actuated to move the



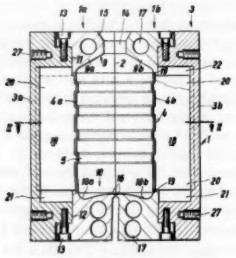
upper bellows downwardly. A suitable vacuum pump is connected by vacuum lines to the areas within each of the bellows.

3,784,344

MULTI-PART BLOW-MOLD FOR MAKING HOLLOW BODIES FROM THERMOPLASTIC MATERIAL

Gunter Korsch, Berlin, Germany, assignor to Firma Emil Korsch Spezialfabrik Fur Komprimiermaschinen, Berlin, Germany

Filed Sept. 9, 1971, Ser. No. 179,006
Int. Cl. B29d *23/03*
U.S. Cl. 425—387 **3 Claims**



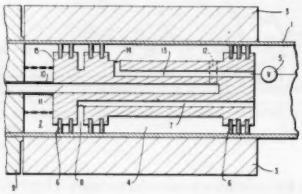
The parts of the blow-mold have cooling spaces tor circulation of a coolant, and have a negative inner wall corresponding to the outer contours of the hollow body to be formed. Each blow-mold part includes a box-type metal body frame and a thin-walled insert presenting the negative contour, each insert being secured to the associated body frame and closing it off internally so that each insert and its associated body frame defines a respective cooling chamber of substantially the height of the insert. The inserts may be relatively thin sheet metal in which the contours are formed by cold working or cold shaping. The blow-mold has centering apertures, at each end, for a shoulder insert and a bottom insert both of which have recesses seating the sheet metal shell inserts. The cooling chamber is divided, for coolant circulation, by guide plates which are shorter than the height of the chamber and terminate alternately in engagement with the shoulder insert and with the bottom insert so that a zig-zag flow path is provided.

3,784,345

APPARATUS FOR THE EXTRUSION OF HOLLOW ARTICLES

Waldemar Wissinger, Siegburg; Josef Kurth, Troisdorf, and Peter Gauchel, Eitorf-Alzenbach, all of Germany, assignors to Dyamit Nobel Aktiengesellschaft

Filed Oct. 20, 1971, Ser. No. 190,772
Claims priority, application Germany, Nov. 12, 1970, P 20 55 628.9
Int. Cl. B29d *23/04*
U.S. Cl. 425—325 **19 Claims**



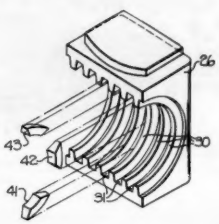
An apparatus for the extrusion of hollow articles of thermoplastic synthetic resin includes an extruded tool and a sizing device adjacent the extruding tool where the hollow article is drawn therefrom. The sizing device has a minor conicity so that the outlet opening in the sizing device is smaller than the inlet opening so that the shrinkage of the dimensions of the article is compensated for. A cooling device may be inserted within a hollow chamber of the article and in addition be externally coupled to the surface of the extruded article as it is drawn through the sizing device.

3,784,346

CONVERTED CORRUGATED PIPE MOLDING MACHINE

Ernest J. Maroschak, Roseboro, N.C., assignor to Plastic Tubing Inc., Roseboro, N.C.

Filed June 12, 1972, Ser. No. 261,780
Int. Cl. B29d *23/03*
U.S. Cl. 425—326 B **11 Claims**



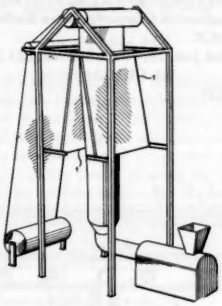
A blow-molding machine for molding corrugated plastic pipe having uninterrupted annular ribs thereon is converted for forming corrugated plastic pipe having interrupting gaps or recesses in certain annular ribs of corrugated pipe being formed. Essentially the conversion is effected by inserting and releasably securing relatively short inserts or segmental blocks in otherwise uninterrupted semicircular valleys of cooperating pairs of semitubular mold sections or dies between and against which the plastic pipe is molded.

3,784,347

BLOWN FILM TUBE COLLAPSING

Leroy E. Robinson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 08,977, Feb. 5, 1970, Pat. No. 3,689,609.
This application Mar. 20, 1972, Ser. No. 236,112
Int. Cl. B29d 7/00
U.S. Cl. 425—387 5 Claims



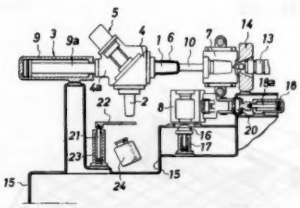
A blown film tube collapsing frame comprising two separate plenum chambers having perforate metal surfaces facing a blown film, tube, or bubble is used to force air through the perforations in said surfaces to collapse the tube or bubble. Each plenum chamber contains adjustable baffles, movable by ropes to fit any size bubble, to ensure the air egress through the perforations immediately adjacent the bubble. Magnets imbeded into the surface of the baffles ensure contact of the perforated plate and the baffles.

3,784,348

INJECTION BLOW-MOLDING APPARATUS

Katashi Aoki, 6037, Oaza Minamijo, Sakahi-machi, Sakaki, Japan

Filed Sept. 25, 1972, Ser. No. 292,222
Claims priority, application Japan, Sept. 29, 1971, 46/77631; Nov. 12, 1971, 46/90413; Nov. 13, 1971, 46/90728; Nov. 19, 1971, 46/108338
Int. Cl. B29c 5/06
U.S. Cl. 425—324 B 8 Claims



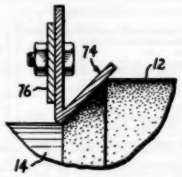
An injection blow-molding apparatus comprising a core mounting pedestal having vertically and horizontally directed surfaces for mounting molding cores each having a blowing hole therethrough, a rotating device for rotating the core mounting pedestal around a bisector of an apex angle formed by said two surfaces so that the molding cores mounted on the pedestal are thereby shifted between two symmetrical positions angularly spaced apart by 180°, a hydraulic device for shifting the core mounting pedestal forwardly and backwardly, a parison forming metal mold for receiving the horizontally disposed molding core and a blow-molding metal mold for receiving the vertically disposed molding core together with a parison formed thereon, another hydraulic device for opening, closing, and clamping said metal molds, and an injection device nozzle touching the parison forming metal mold.

3,784,349

PIPE COATING BEVELER AND SEALER

Francis L. Bickham, Dickinson, Tex., assignor to H. C. Price Co., Bartlesville, Okla.

Filed June 21, 1971, Ser. No. 154,735
Int. Cl. B28b 21/96
U.S. Cl. 425—402 6 Claims



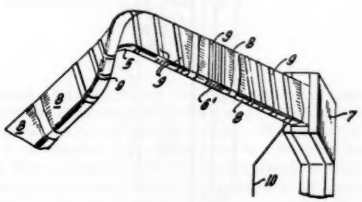
A method and apparatus for finishing the terminal coated end of a joint of pipe covered with an asphaltic, mastic coating. The joint of pipe is lifted from a supporting surface and rotated about its longitudinal axis to expose the complete diameter of the terminal edge of the coating to a heat source which partially softens the coating. A beveling iron having a configuration corresponding to that desired for the finished edge is moved into engagement with the coating edge and held stationary relative to the rotating pipe. The beveling iron is also heated to facilitate smoothing of the terminal edge and to assure sealing of the coating relative to the pipe surface. By maintaining the beveling iron stationary relative to the rotating pipe, an accurate and highly uniform terminal edge is presented. Any excess coating material which is removed during the beveling operation is prevented from adhering to the uncoated end of the pipe by a stationary scraper which continually engages the uncoated surface of the pipe as the latter rotates. The scraper is also heated to prevent the removed coating from adhering to it.

3,784,350

APPARATUS FOR HARDENING WINDING INSULATION

Knut Nylund, Zurich, Switzerland, assignor to Maschinenfabrik Oerlikon, Zurich, Switzerland

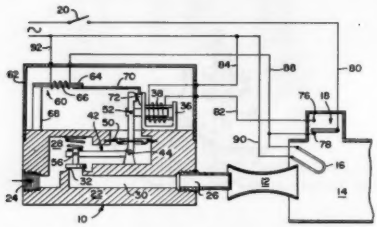
Continuation of Ser. No. 792,544, Jan. 21, 1969, abandoned.
This application Sept. 13, 1971, Ser. No. 179,978
Int. Cl. B29h 3/00
U.S. Cl. 425—445 5 Claims



The hardening of winding insulation containing thermosetting plastics where deformation of the winding coil is a factor, is accomplished by variably heating the winding along its length in accordance with the different mechanical or electrical characteristics required in the winding. A portion of the

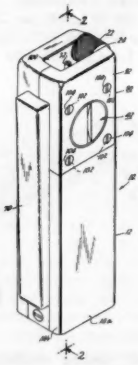
winding insulation can be hardened uniformly in a heated mold with the remainder being heated by variably spaced heater bands wrapped around aluminum foil enclosing the winding insulation.

3,784,351
ELECTRIC IGNITION SYSTEM
Denis G. Wolfe, and Hugh J. Tyler, both of Santa Ana, Calif., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Apr. 14, 1972, Ser. No. 243,942
Int. Cl. F23h 5/00
U.S. Cl. 431—66 **11 Claims**



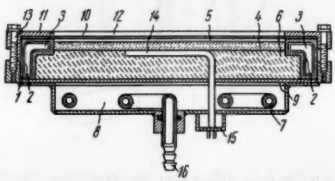
The present fuel control and ignition system senses both the temperature of an electric igniter and flame at a burner. When the system senses that the igniter has reached ignition temperature, the main fuel valve is opened and the igniter deenergized. If ignition occurs, then the main fuel valve will be held open and the igniter deenergized until there is no more demand for heat, when the fuel valve will be closed. However, if ignition does not occur or if power is lost after a flame has been established at the burner, then the main fuel valve will be closed and the ignition sequence will be automatically restarted.

3,784,352
LIGHTER AND FUEL RESERVOIR
Patrick R. J. Court, West Los Angeles, Calif., assignor to Paul G. Garrity, Stamford, Conn.
Filed Feb. 7, 1972, Ser. No. 224,051
Int. Cl. F23q 1/02
U.S. Cl. 431—277 **10 Claims**



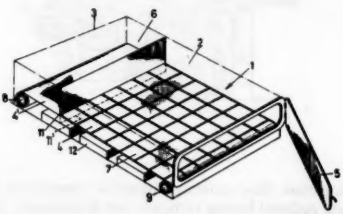
A lighter and fuel reservoir is disclosed in which the fuel utilized is a liquified gas. The lighter is characterized by a deformable valve assembly which controls the flow of gaseous fuel to a burner where it is ignited by a spark generator. In turn, the flow of fuel from the reservoir to the valve assembly is controlled by a fuel regulator which includes a compressible porous member.

3,784,353
FLAMELESS GAS CATALYTIC HEATER
Gennady Alexandrovich Chapurin, ulitsa Kadischeva 3, kv. 49, Saratov, U.S.S.R.
Filed Jan. 28, 1972, Ser. No. 221,682
Int. Cl. F23d 13/14
U.S. Cl. 431—329 **4 Claims**



Flameless gas catalytic heaters for local heating in explosive environments and installations whose operating principle is predicated on the catalytic oxidation of combustible gases as they pass through a porous catalytically active bed positioned in a heater housing whose side walls are hollow along the perimeter of the active bed and covered inside with a material having a high heat reflection coefficient.

3,784,354
BAKER'S OVEN
Adriaan Verhey, Katendrechtse Lagedijk 217b, Rotterdam, Netherlands
Filed Jan. 17, 1972, Ser. No. 218,425
Claims priority, application Netherlands, Jan. 19, 1971, 7100700
Int. Cl. F27b 9/14
U.S. Cl. 432—152 **8 Claims**



The volume of a baker's oven is rendered adjustable by the provision of a movable rear wall, preferably having sidewall screens screening the space not used from the heat source. An oven having a plurality of oven compartments, each of which is formed for independent adjustment of the volume thereof, is also disclosed.

CHEMICAL

3,784,355

SOLVENT DYEING OR SOLVENT CREASEPROOFING WITH STEAM AND SOLVENT VAPOR DRYING

Brian Crosbie Fielding, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Nov. 8, 1971, Ser. No. 196,333

Claims priority, application Great Britain, Nov. 6, 1970, 52943/70

Int. Cl. D06p *102*

U.S. Cl. 8—175 **10 Claims**

A process for the application of a finishing agent to a substrate which comprises treating the substrate with a solution, or a dispersion, or an emulsion of the finishing agent in an organic solvent and then treating the substrate with steam for a time sufficient to remove a major proportion of the organic solvent, and subsequently finally treating the substrate with superheated steam or with the vapor of an organic solvent.

3,784,356

CELLULOSIC FLAME RETARDANT SYSTEM

George M. Wagner, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Nov. 10, 1971, Ser. No. 197,479

Int. Cl. D06m *13/44*

U.S. Cl. 8—196 **11 Claims**

A process for imparting flame retardant character to cellulosic containing materials has been devised in which the cellulosic material is treated with an aqueous solution of further polymerizable methylol-phosphorus compound obtained by reacting a tetrakis(hydroxymethyl)phosphonium acid salt e.g., tetrakis(hydroxymethyl)phosphonium chloride with about 0.5 to 1.5 mol proportion of ammonia, in the presence of a carbamic acid derivative, e.g., urea, and the treated material is contacted with an aqueous solution of ammonia thereby curing the methylol-phosphorus-compound in and on the cellulosic material.

3,784,357

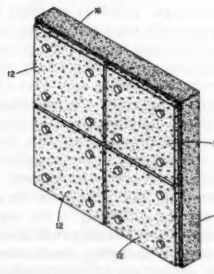
PROTECTIVE SURFACES OR LINERS FOR SUBAQUEOUS STRUCTURES

James S. Muraoka, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 13, 1972, Ser. No. 217,501

Int. Cl. A61l *13/00*; **C04b** *31/12*

U.S. Cl. 21—61 **6 Claims**



A concrete slab or a tubular concrete pipe is provided with a wall surface or liner to protect the concrete member from marine-fouling organisms. The surface or liner incorporates an expanded shale aggregate, which aggregate has been impregnated with chemicals toxic to marine organisms. The toxic material will leach out very slowly over a long period to provide the desired protection. Such protective surfaces or liners are readily removable and can easily be replaced when the toxic chemicals are completely leached out.

3,784,358

SUPPORT FOR CHROMOGENIC GLYCOL TEST REAGENT

Harry N. Drake, Jr., Fairless Hills, Pa., assignor to Cities Service Oil Company, Tulsa, Okla.

Filed Sept. 24, 1971, Ser. No. 183,697

Int. Cl. G01n *31/22*

U.S. Cl. 23—253 TP **11 Claims**

An improved supporting medium for a chromogenic reagent for use in an aldehyde detection test. The chromogenic reagent, preferably 3-methyl-2-benzothiazolinone hydrazone hydrochloride monohydrate (MBTH), is absorbed on a porous polymeric material. The preferred polymeric supporting medium is a film of porous polyethylene. The chromogenic reagent supported on the porous polymer finds particular utility in a test for determining the presence of glycol in engine oil.

3,784,359

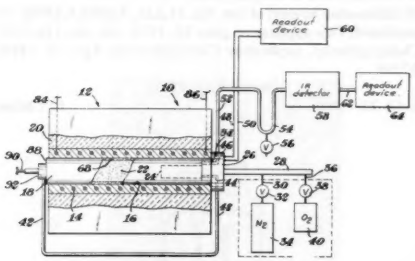
ANALYTICAL APPARATUS

William H. Parth, Saginaw, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 3, 1971, Ser. No. 195,387

Int. Cl. G01n *31/12*

U.S. Cl. 23—253 PC **9 Claims**

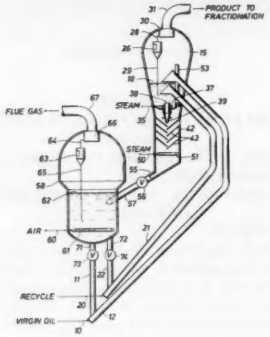


Apparatus for determining the oxygen demand of combustible materials in aqueous dispersions and for determining the total carbon content of aqueous systems. The apparatus comprises a combustion tube surrounded by controlled heating means. The combustion tube has sample insertion means and reference gas including oxygen inlet means at an entry end, sample expansion zone and catalyst disposed within the tube, an oxygen detector cell disposed within the tube and gas outlet means coupled to the exit end of the tube. The gas outlet means is coupled to carbon dioxide detection means. Readout means are coupled to both detectors. The reference gas passes through a closed path in the oxygen detector prior to its insertion at the entry end of said combustion tube.

3,784,360
FLUID CATALYTIC CRACKING

Dorrance P. Bunn, and Henry E. Jones, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Sept. 20, 1971, Ser. No. 182,030
Int. Cl. B01j *9/20*
U.S. Cl. 23—288 S **3 Claims**

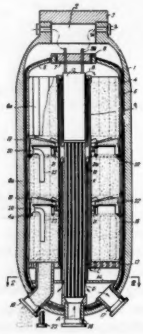


A fluid catalytic cracking apparatus wherein the reaction zone comprises one or more risers and a reaction vessel. A constant inventory of catalyst is maintained in a fluidized state in the reaction vessel and catalyst is continuously withdrawn from the reaction at a rate equal to the rate catalyst enters the reaction vessel. An improved catalyst check valve connecting the reaction vessel and stripping zone controls the catalyst inventory and catalyst withdrawal rate.

3,784,361
CONVERTER FOR HIGH PRESSURE SYNTHESIS

Jiri Kubec, Hlavni, and Vladimir Saroch, Brno, both of Czechoslovakia, assignors to Kralonopolska Strojirna narodni Podnik, Brno, Czechoslovakia

Continuation-in-part of Ser. No. 31,124, April 23, 1970, abandoned. This application June 24, 1971, Ser. No. 156,310
Claims priority, application Czechoslovakia, Apr. 23, 1969, 2887/69
Int. Cl. B01j *9/04*
U.S. Cl. 23—289 **12 Claims**



A converter for high-pressure synthesis of ammonia or methanol having an upright outer pressure shell consisting of a cylindrical middle body and two hemisphere-like heads, a thin walled conforming liner in the shell, an upright conduit axially centered in the shell which extends along the whole length of the cylindrical middle body, from a built in grating in the lower hemisphere like head close to a manhole atop the upper head, the manhole being just large enough for insertion of the conduit therethrough. A body of particulate catalyst material fills the annular space between the liner and the conduit and extends from the grating almost to the top end of the conduit. Cooling means are axially spaced through the bed. An electric heater and a shell and tube heat exchanger are arranged one above the other in the conduit, both adapted for preheating of the main portion of the gaseous reactants before the reactants enter the catalyst body. The remainder of the reactants is injected into the catalyst body through the cooling means which comprise at least one system of gas permeable coffers extending radially over the entire flow section of the catalyst bed.

3,784,362
ANTI-STATIC FUEL COMPOSITION

William R. Siegart, Poughkeepsie, N.Y.; William D. Blackley, Lake Elmo, Minn., and Harry Chafetz, Poughkeepsie, N.Y., assignors to Texaco Inc., New York, N.Y.

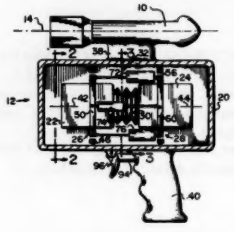
Filed June 21, 1972, Ser. No. 265,030
Int. Cl. C10l *1/16*
U.S. Cl. 44—62 **10 Claims**

Anti-static fuel composition containing the reaction product of an organic hydroxy compound having the formula ROH in which R is a hydrocarbyl radical having from 2 to 30 carbon atoms and a fluorinated polymer from the group consisting of fluorinated polystyrene and fluorinated polypropylene.

3,784,363
DAMPED GYROSCOPIC STABILIZER

William G. Flannelly, South Windsor, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed Apr. 28, 1971, Ser. No. 138,259
Int. Cl. G01c *19/00*
U.S. Cl. 74—5.34 **13 Claims**

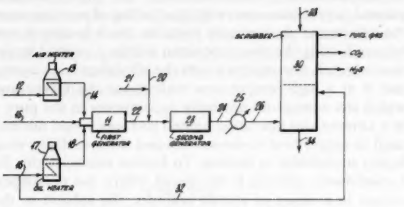


A damped gyroscopic stabilizer employs two gyroscopes, each having a gyroscopic mass and a drive motor for rotating the mass about a spin axis to generate gyroscopic stabilizing moments. The gyroscopes are universally pivotally mounted on a support frame so that the spin axes of the gyroscopic masses may assume a generally aligned relationship in a normally stable or steady-state condition. A coupling connected between the two gyroscopes constrains the gyroscopes to pivotal motions with respect to the support frame which are equal in magnitude but are opposite in sense. With the pivotal motions so constrained, stabilizing moments generated by the gyroscopes are applied additively to the support frame and stabilize the frame about axes perpendicular to the normally aligned spin axes. A damping mechanism is connected between the two gyroscopes to limit or damp the universal pivoting motions of the gyroscopes and the associated stabilizing effect of the gyroscopes on the support frame. The damping mechanism is adjustable and can eliminate all universal pivoting motion and the stabilizing effect of the two gyroscopes.

3,784,364
PRODUCTION OF FUEL GAS

William L. Slater, La Habra; Warren G. Schlinger, Pasadena, and William B. Crouch, Whittier, all of Calif., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 4, 1971, Ser. No. 195,771
Int. Cl. C01b 2/14; C07c 9/04
U.S. Cl. 48—215 **13 Claims**



Fuel gas suitable for use in conjunction with a gas turbine is prepared by subjecting a hydrocarbon oil to partial combustion using air as the oxidizing medium and injecting a additional hydrocarbon oil into the hot partial combustion products.

3,784,365
ORGANIC-BONDED ABRASIVE CONTAINING OCTACHLORONAPHTHALENE FILLER

Richard T. Caserta, Lansdale, and Merrill Ellendman, Philadelphia, both of Pa., assignors to Red Hill Grinding Wheel Corporation, Pennsburgh, Pa.

Filed Apr. 6, 1971, Ser. No. 131,778
Int. Cl. C08g 51/12
U.S. Cl. 51—298 **2 Claims**

In an organic-bonded abrasive product comprising abrasive material and an organic binder, the improvement comprising adding to said abrasive material and binder an effective amount of a completely chlorinated hydrocarbon whose carbon skeleton consists only of aromatic carbon atoms.

3,784,366
METHOD FOR PROMOTING FORMATION OF FRUIT ABSCISING LAYER

Shogo Takahashi, Tokyo; Takayasu Yamada, Fujisawa, and Hiromi Okudaira, Soka, all of Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Dec. 17, 1971, Ser. No. 209,403
Claims priority, application Japan, Dec. 27, 1970, 45/127181
Int. Cl. A01n 9/12
U.S. Cl. 71—90 **1 Claim**

Fruit abscising compositions for facilitating the harvest of fruits, especially citrus fruits, which comprises as an active ingredient at least one thiamine derivative selected from the group consisting of

thiamine esters and their salts with inorganic acids; and

S-acyl and disulfide derivatives of thiol-type thiamines, their esters and their salts with inorganic acids

and an agriculturally-acceptable carrier.

3,784,367
PRODUCTION OF POTASSIUM POLYPHOSPHATES

William Percy Moore, Chester, Va., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Aug. 10, 1971, Ser. No. 170,641
Int. Cl. C05b 7/00
U.S. Cl. 71—36 **1 Claim**

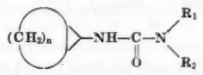
A process for producing a potassium polyphosphate fertilizer solution wherein the available amount of phosphoric anhydride is totally water soluble and is, therefore, suitable for the manufacture of liquid fertilizers. Concentrated wet-process phosphoric acid containing polyphosphoric acids is reacted with potassium chloride at a reaction temperature of 150°–500°C. in the presence of a dehydrochlorination catalyst. Hydrogen chloride is vaporized from the reaction melt and the melt is quenched in aqueous alkaline solution to produce the potassium polyphosphate fertilizer solution.

3,784,368
BICYCLO(N.1.0)ALKYL UREAS AS HERBICIDES

Elmar Sturm, Arlesheim, and Christian Vogel, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 886,356, Dec. 18, 1969, Pat. No. 3,714,217. This application Aug. 31, 1972, Ser. No. 285,364
Int. Cl. A01n 9/20
U.S. Cl. 71—119 **6 Claims**

Bicyclo[n.1.0]alkyl-ureas of the formula



wherein

R_1 represents hydrogen, a lower alkyl or alkoxy radical,

R_2 represents a lower alkyl, alkenyl or alkynyl radical, and

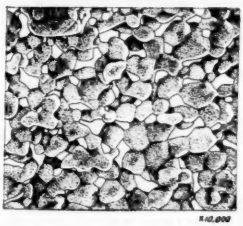
n represents an integer of from 3 to 6

are disclosed as herbicidally active compounds. Herbicidal compositions and a method of controlling undesirable plant growth with the aid of such compounds are also described.

3,784,369
METHOD FOR PRODUCING REFRACTORY METAL POWDER

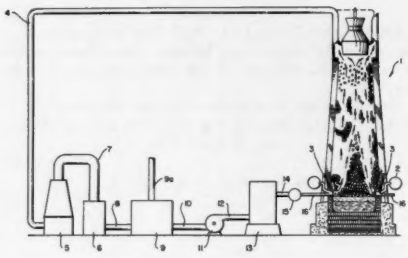
Kjell A. Svanstrom, Sandhamnsvagen 27, Nynashamn, Sweden

Continuation of Ser. No. 813,746, April 4, 1969, Pat. No. 3,701,649. This application Aug. 24, 1972, Ser. No. 283,575
Int. Cl. C22b 57/00, 49/00, 51/00
U.S. Cl. 75—0.5 BB **6 Claims**



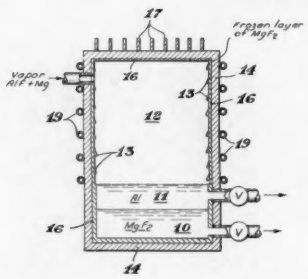
A method is provided for producing refractory metal powder from a refractory metal ferro-alloy containing a refractory metal selected from the group consisting of tungsten, molybdenum, niobium and tantalum and containing at least about 8 percent total of iron plus silicon, the silicon constituting at least one halidizable metal in addition to iron as an impurity. The alloy is crushed and then subjected to dissolution at a temperature of at least about 900° C with a gaseous hydrogen halide selected from the group HCl and HF for a time at least sufficient to effect substantial removal of said iron and said at least one other metal impurity as halide vapor, whereby to provide a finely divided refractory metal powder low in said impurities.

3,784,370
PROCESS OF MANUFACTURING PIG IRON
Edward Stephenson, Jr., Lathrup Village, Mich., assignor to Stephenson Papesch Processes, Inc., Lathrup, Mich.
Filed Sept. 27, 1971, Ser. No. 183,999
Int. Cl. C21b 5/06
U.S. Cl. 75—42 4 Claims



A method of operating a blast furnace in which the blast furnace gas is stripped of nitrogen by the use of a molecular sieve and recycled.

3,784,371
CORROSION RESISTANT FROZEN WALL
Leigh B. Bangs; James O. Huml, and Gilbert S. Layne, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Continuation of Ser. No. 159, Jan. 2, 1970, abandoned. This application Dec. 27, 1971, Ser. No. 212,367
Int. Cl. C22b 21/04
U.S. Cl. 75—68 R 4 Claims



Highly corrosive molten or vaporous halometaliferous systems comprising metals and metal halides are confined by heat transferring walls on which a frozen layer of the highest melting component of the system is maintained as a protective coating. The confining walls are in essence composites which, in transverse cross-section, consist of a thermally conductive structural wall member having an adherent solid layer of the highest melting component of the confined system. The structural member is continuously cooled sufficiently to maintain its temperature below the melting point of the adhering solid layer. In one embodiment of the invention, the protected walls are employed as heat exchanging surfaces on which vaporous mixtures of metal halides and metal vapors are condensed.

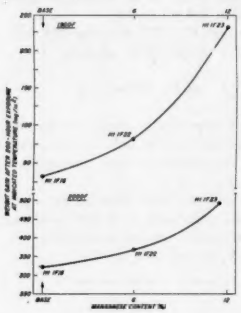
3,784,372
PRODUCTION OF ALUMINUM
Herbert M. Scull, Jr., Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Continuation-in-part of Ser. No. 50,878, June 29, 1970, abandoned. This application Jan. 6, 1972, Ser. No. 215,804
Int. Cl. C22b 21/00
U.S. Cl. 75—68 C 20 Claims

In the production of aluminum by thermally decomposing an alkylaluminum compound with the aid of suitable apparatus, a problem arises with the fouling of such apparatus by the adherence of aluminum particles. Such fouling is reduced by conducting the decomposition within a neutral liquid solvent which is non-reactive with the alkylaluminum compound and is at a high temperature well above the temperature at which the compound normally decomposes in the pure state. In a commercial operation heated surfaces would normally be used to supply heat to the solvent and these surfaces would be highly susceptible to fouling. To further minimize this fouling a continuous process is envisaged where the decomposition occurs in a series of stirred reactors, the solvent in the last reactor being depleted of alkylaluminum compound. This depleted solvent is passed through a heat exchanger and then back to the first reactor. This depleted solvent would not cause fouling of the heat exchanger.

ERRATUM

For Class 75—84 see:
Patent No. 3,784,593

3,784,373
AUSTENITIC STAINLESS STEEL
Martin N. Ornitz, Pittsburgh; Arthur Moskowitz, New Brighton Twsp., Beaver County, and Jerome P. Bressanelli, Pittsburgh, all of Pa., assignors to Crucible Inc., Pittsburgh, Pa.
Filed Mar. 13, 1972, Ser. No. 234,305
Int. Cl. C22c 39/28
U.S. Cl. 75—128 F 3 Claims



An austenitic stainless steel and a thermal reactor constructed therefrom consisting essentially of, in weight percent, carbon 0.15 max., manganese 3.0 max., phosphorus 0.04 max., sulfur 0.04 max., silicon 1.0 max., nickel 22 to 32, chromium 20 to 30, nitrogen 0.10 max., boron 0.01 max., and the balance iron.

3,784,374

METHOD OF IMPROVING THE MACHINABILITY AND MECHANICAL PROPERTIES OF A STEEL

Edouard Almand, Dunkerque, France, assignor to Creusot-Loire, Paris, France

Filed May 7, 1971, Ser. No. 141,414
Claims priority, application France, May 8, 1970, 7016776
Int. Cl. C22c 37/00; B22d 27/20
U.S. Cl. 75—129 6 Claims

The machinability and mechanical properties of a steel are simultaneously improved by adding to the molten steel a sodium oxysulphide and one or more of selenium, tellurium and bismuth. The oxysulphide is suitably introduced into the ladle and the selenium, tellurium and bismuth into the molten steel when it is in the ingot mould.

3,784,375

LATENT ELECTROSTATIC IMAGE FORMS A DEVELOPABLE IMAGE IN A SILVER SALT

Paul B. Gilman, Jr., and Joseph Y. Kaukeinen, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 887,411, Dec. 22, 1969. This application , Ser. No. 264,214
Int. Cl. G03g 13/22; G03c 5/00
U.S. Cl. 96—1 R 14 Claims

A process of rendering visible electrostatic charge patterns is described. The process involves the formation of a charge pattern on a charge-retaining member which is then placed in contact with an unexposed silver salt-containing element to form a latent image on the element which is then processed by standard photographic techniques to form a visible silver image. The process eliminates detrimental solvent and abrasive action which occur in standard electrophotographic development techniques.

3,784,376

PHOTOCONDUCTIVE ELEMENT CONTAINING FURANS, INDOLES, OR THIOPHENES

Charles J. Fox, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 73,257, Sept. 16, 1970, abandoned. This application Feb. 4, 1972, Ser. No. 223,770
Int. Cl. G03g 5/00
U.S. Cl. 96—1.5 10 Claims

Organic photoconductive elements of improved electrophotographic speed are prepared by coating on an electrically conducting support a photoconductive layer containing a 1,3-diarylisobenzofuran or 1,3-diaryl-4,7-dihydroisobenzofuran or the corresponding isoindole or isobenzothiophene derivatives.

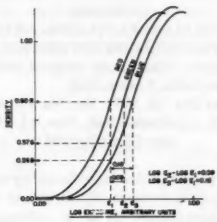
3,784,377

CURVE ANALYSIS METHOD IN COLOR PRINTING

Marilyn Levy, Red Bank, and Richard G. LeSchander, Trenton, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 10, 1972, Ser. No. 242,602
Int. Cl. G03c 7/16
U.S. Cl. 96—23 4 Claims

The proper color balance to be used in making a color print in color photography from a color negative is determined from analysis of the characteristic curves generated from a test print of a continuous wedge or a stepped density tablet exposed through the unexposed processed portion of the emulsion to be balanced.



This invention relates to the use of a curve analysis method in determining the proper color balance necessary to make a color print from a color negative.

3,784,378

DOUBLE-EXPOSURE METHOD FOR PRODUCING REVERSE IMAGES IN PHOTOPOLYMERS

John Vincent Gramas, Middletown, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 18, 1971, Ser. No. 189,835
Int. Cl. G03c 5/04, 5/24
U.S. Cl. 96—27 E 11 Claims

For the production of reverse images, a photosensitive element comprising a polymerizable (or crosslinkable) material and two photoinitiators responsive to different wavelengths of actinic radiation is exposed successively to actinic radiation of wavelengths appropriate for the two photoinitiators. The first exposure is imagewise and the second is nonimagewise. A polymerization inhibitor is present during both exposures. The method is useful in the graphic arts where a positive-working system is required, e.g., for relief or planographic printing plates, direct positive copying films, and the like.

3,784,379

METHOD OF LAMINATING ONE OR MORE MATERIALS WITH A BASE STRUCTURE FOR USE IN A HIGH VACUUM ELECTRON TUBE AND METHOD OF MASKING THE BASE PREPARATORY TO LAMINATION

Richard Kaspar Orthuber, Sepulveda, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 2, 1971, Ser. No. 204,158
Int. Cl. G03c 5/00
U.S. Cl. 96—36.2 7 Claims

A method of making a structure for use in a black and white or color Kinescope or the like, the structure being called a multichannel array and including a perforated channel type electron multiplier with two perpendicular sets of insulated conductive strips extending over rows and columns of the multiplier holes. The strips have holes in registration with the multiplier holes. Conductive strips and glass insulating layers are

deposited using a photoresist layer with or without a transparent photographic film. The photoresist is exposed to light through the multiplier holes.

3,784,380

METHOD FOR MANUFACTURING ARTWORK FOR PRINTED CIRCUIT BOARDS

Giampiero Compare, Milan, Italy, assignor to Honeywell Information Systems Italia, Caluso, Italy

Filed Oct. 28, 1971, Ser. No. 193,481
Claims priority, application Italy, Nov. 11, 1970, 31569/70
Int. Cl. G03c *5/06*
U.S. Cl. 96—44 **11 Claims**

A method is provided for manufacturing matrix artworks for use in fabricating printed circuit boards which includes submitting a photographic plate to subsequent exposures through different masking means, to obtain latent images whose superposition, after development, results in the final artwork. Optical reference means, for ensuring the exact superposition of the latent images, are obtained by partial development of the plate in well defined marginal areas of the same.

3,784,381

HIGH SPEED SILVER CHLOROIODIDE EMULSIONS

Philippe Perignon, Vincennes, France, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 3, 1971, Ser. No. 195,465
Claims priority, application France, Nov. 13, 1970, 70.40564
Int. Cl. G03c *1/02*
U.S. Cl. 96—94 **5 Claims**

In a process for the preparation of a silver halide photographic emulsion containing a major proportion of chloride, about 0.1 mole to about 5 mole percent of iodide and up to about 10 mole percent of bromide comprising precipitating said silver halide in the presence of a hydrophilic colloid, the improvement which comprises precipitating said silver halide into a medium having a pH in the range 5–9 and a pAg of at least about 7.8 by adding to the precipitation mixture, no later than at the end of said precipitation, a weak solvent for silver halide selected from the group consisting of ammonium chloride, ammonium nitrate and magnesium chloride in a quantity in stoichiometric excess with respect to the quantity of alkali metal chloride necessary for the precipitation of the silver halide, this excess being between 4 moles and 180 moles per 100 moles of formed silver halide.

3,784,382

INTERNAL SUPPORT FOR DIFFUSION TRANSFER ELEMENT

Kai Liang, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 3, 1972, Ser. No. 215,096
Int. Cl. G03c *1/76, 5/54, 7/00*
U.S. Cl. 96—77 **11 Claims**

An internal support for a photographic element and film unit is described comprising a porous, polymeric material with pore diameters ranging from about 0.5 to about 12 microns and a porosity of from about 1 to about 25 percent. The transfer image has an improved image quality and sharpness and postprocess retention of processing fluid is minimized.

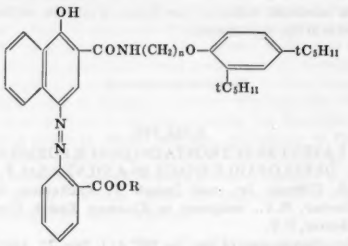
3,784,383

LIGHT SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Masakuni Iwama; Mitsuto Fujiwara; Tamotsu Kojima, and Toshihiko Yamamoto, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 28,083, April 13, 1970, abandoned. This application May 23, 1972, Ser. No. 256,010
Claims priority, application Japan, Apr. 14, 1969, 44-28287
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **8 Claims**

A compound of the formula:



wherein *n* is an integer of 1 to 4 and R is a lower alkyl group is found to be useful as a cyan coupler providing auto-masking mechanism for light-sensitive color photographic materials so as to compensate for the deficient color reproductivity of said materials.

3,784,384

HIGH TEMPERATURE CERAMIC COMPOSITION FOR HYDROGEN RETENTION

Ronald W. Webb, Canoga Park, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Mar. 17, 1964, Ser. No. 353,024
Int. Cl. C03c *3/04*
U.S. Cl. 106—39 **4 Claims**

1. A ceramic coating composition consisting essentially of about, by mole percent:

SiO_2 — 60–70
Na_2O— 1–4
Li_2O — 1–6
CaO — up to 6
TiO_2 — 6–14
MgO— up to 3
BaO— 10–20
SrO— up to 2
ZrO_2 — 3–5
MnO_2— up to 3.

3,784,385

METHOD OF PREPARING MIX FOR PRODUCING REFRACTORY GAS CONCRETE AND THE PRODUCT OBTAINED THEREBY

Konstantin Dmitrievich Nekrasov, Bronitsky pereulock, 2, kv. 26; Alexandra Petrovna Tarasova, Bronitsky pereulok, 2, kv. 9; Alfred Avgustovich Bljusin, ulitsa Borisa Galushkina, 17, kv. 397; Tamara Petrovna Avdeeva, 4 Veshnyakovsky proezd, 5, korpus 1, kv. 48, all of Moscow; Vyacheslav Alexandrovich Elin, ultisa Lomonosova, 10, kv. 27, Moscow-Zhukovsky; Pavel Aronovich Roizman, ulitsa Bljukhera, 33/1, kv. 55, Temirtau Karagandinskaya Oblast, and Alexandr Panteleevich Denisenko, ulitsa Mendeleeva, 10, kv. 4, Magnitogorsk, all of U.S.S.R.

Filed Feb. 18, 1972, Ser. No. 227,623
Int. Cl. C04b *33/00, 33/02, 33/12*
U.S. Cl. 106—40 R **4 Claims**

Method of preparing a mix for producing refractory gas concrete containing powdered chrome-alumina slag and a

high-alumina refractory material as fillers, comprising the mixing of constituents followed by adding a gas-developing agent. The resulting concrete is also subject of the invention.

3,784,386

CLADDING GLASSES FOR PHOTOCHROMIC OPTICAL FIBERS

Roger J. Araujo, and Loris G. Sawchuk, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Feb. 16, 1971, Ser. No. 115,370

Int. Cl. C03c *13/00, 3/08;* **G02b** *5/14*

U.S. Cl. 106—50 **2 Claims**

This invention relates to the discovery of glass compositions suitable for cladding photochromic optical fibers. Such glasses consist essentially, in weight percent on the oxide basis as calculated from the batch, of about 50–67 percent SiO_2, 5–15 percent Al_2O_3, 5–25 percent B_2O_3, 0–5 percent P_2O_5, 0–5 percent RO wherein RO is one or more oxides selected from the group consisting of CaO, SrO, MgO, ZnO, BaO and NiO, 0–5 percent Li_2O, 0–12 percent Na_2O, 0–10 percent K_2O and 0–5 percent Cs_2O, wherein $[2Li_2O + Na_2O + K_2O + 1/2Cs_2O]$ is at least about 10 percent, 0–10 percent TiO_2 and 0–10 percent CeO_2, wherein $[TiO_2 + CeO_2]$ does not exceed about 10 percent, 0–0.5 percent Sb_2O_3 and 0–0.5 percent As_2O_3, to which may be added 0–15 percent F, as calculated in excess of the weight of the other glass constituents. These glasses are particularly useful because, in addition to combining proper thermal expansion and refractive index with good ultraviolet light absorption, they do not deleteriously effect the natural fading rate of the photochromic core glass during the fabrication of the cladded fiber optic.

3,784,387

GLASS COMPOSITIONS OF LOW INHERENT RADIOACTIVITY

Werener Sack, Mainz-Gonsenheim, Germany, assignor to JENAer Glaswerk Schott & Gen., Mainz, Germany

Filed Mar. 4, 1971, Ser. No. 121,166

Claims priority, application Germany, Mar. 6, 1970, P 20 10 683.6

Int. Cl. C03c *3/08, 3/10, 3/30*

U.S. Cl. 106—54 **9 Claims**

Borosilicate glass of low inherent radioactivity, free of potassium oxide.

3,784,388

WEAR RESISTANT ALUMINOUS CERAMIC ARTICLES

Alan G. King, Aurora, Ohio, and John C. Logan, Leicester, Mass., assignors to Norton Company, Worcester, Mass.

Division of Ser. No. 764,582, Oct. 2, 1968, abandoned. This application Aug. 2, 1971, Ser. No. 168,461

Int. Cl. C04b *35/10*

U.S. Cl. 106—73.4 **1 Claim**

This invention relates to low cost, strong, highly wear resistant ceramic articles, the wear resistance being comparable to that of cemented carbides. The ceramic articles are hot-pressed bauxite compositions, 78–94 percent Al_2O_3, less than 9 percent SiO_2, 2–8 percent Fe_2O_3, 2–4 percent TiO_2 and a total of less than 3 percent CaO, MgO, Na_2O.

3,784,389

METHOD OF AND APPARATUS FOR BURNING CEMENT INCLUDING ATOMIZING DRYER IN CYCLONE PREHEATER BYPASS

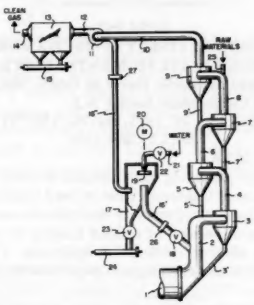
Niels Erik Hastrup, Copenhagen-Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J. and Atkieselskabet Niro Atomizer, Copenhagen, Denmark, part interest to each

Filed Jan. 21, 1972, Ser. No. 219,758

Claims priority, application Great Britain, Feb. 22, 1971, 5124/71

Int. Cl. C04b *7/02*

U.S. Cl. 106—100 **22 Claims**



In the manufacture of cement clinker from cement raw materials containing an undesirably high amount of alkalis, a rotary kiln having a preheater for the raw materials is employed. A portion of the effluent gases from the kiln is caused to bypass the preheater as a separate divisional flow. Water is atomized into this flow in such amounts that substantially all of the alkalis entrained therein in the form of solids, liquid or vapor are struck by the atomized fine drops of water. All of the water is vaporized in the hot flow of gas so that a substantial part of the alkalis is precipitated in the form of a fine dry powder, and the gas is simultaneously cooled.

3,784,390

SHAPED BODIES OF PULLULAN AND THEIR USE

Hiromi Hijiya, and Makoto Shiosaka, both of Okayama, Japan, assignors to Hayashibara Biochemical Laboratories, Incorporated, Okayama-ken, Japan

Filed July 13, 1972, Ser. No. 271,378

Claims priority, application Japan, July 23, 1971, 46/54579; Oct. 30, 1971, 46/85960

Int. Cl. C08h *1/00, 7/00*

U.S. Cl. 106—139 **14 Claims**

Pullulan, a water-soluble polysaccharide produced by Pullularia pullulans from conventional culture media and consisting of repeating units of maltotriose linked by α-1,6 bonds, can be shaped by compression molding or extrusion at elevated temperature or by evaporation of water from its aqueous solutions to form shaped bodies, such as films or coatings which are practically impermeable to atmospheric oxygen in thin layers and unaffected by oils and fats so as to provide valuable packing materials for food, pharmaceuticals, and other oxygen sensitive materials. Pullulan is edible and biodegradable.

3,784,391

FINELY DIVIDED HOLLOW MICROCAPSULES OF POLYMERIC RESINS

Uno Kruse, Neptune, and Daniel F. Herman, Princeton, both of N.J., assignors to N L Industries, Inc., New York, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,685

Int. Cl. C08b *27/22, 21/06;* **C08f** *47/16*

U.S. Cl. 106—170 **12 Claims**

Spheroidal shaped, hollow microcapsules of thermoplastic polymeric resins have been prepared which have an average

diameter of from 0.1μ to 1.0μ. Each of the microcapsules are filled with air and have an average wall thickness of from about 3 percent to 30 percent of the diameter of the microcapsules.

These microcapsules are obtained from an emulsion comprising water and microcapsules of the polymeric resin containing a non-solvent for the resin. The microcapsules are suspended in the water and the non-solvent is present inside the microcapsules.

Either one of these products, i.e. the microcapsules themselves or the water emulsion containing the microcapsules described above, may be used as an opacifier in paint or other systems.

3,784,392

PRODUCTION OF FINELY DIVIDED AMORPHOUS ALUMINO-SILICATE PIGMENTS FROM KAOLIN

Orlando Leonard Bertorelli, Havre de Grace, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Filed Apr. 29, 1971, Ser. No. 138,791

Int. Cl. C09c *1/00*

U.S. Cl. 106—288 B **4 Claims**

A method for preparing finely divided alumino silicate pigments of increased brightness from refined kaolinic materials is disclosed. The method involves the hydrothermal treatment of an aqueous dispersion of refined kaolins or kaolinic pigments and an alkaline earth metal hydroxide. The products have particular utility as high grade paper coating pigments.

3,784,393

PIGMENTED PLASTICS

George Frank Sonn, Edison, and Frank Michael McGonigle, South Plainfield, both of N.J., assignors to Inmont Corporation, New York, N.Y.

Filed June 1, 1971, Ser. No. 148,979

Int. Cl. C08h *17/02*

U.S. Cl. 106—288 Q **7 Claims**

Compositions containing pigment, cellulose triacetate, and small amounts of high boiling solvents are prepared for use as concentrates for coloring cellulose triacetate solutions prior to spinning of yarns and filaments from the solution.

3,784,394

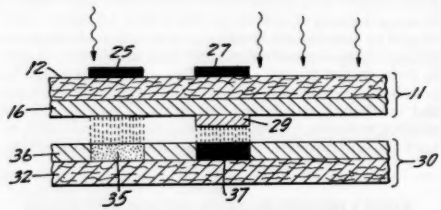
LATENT IMAGE COMPOSITE MASTER AND METHOD

Leonas L. Bildusas, Wheaton, Ill., and Wendell J. Manske, Village of Birchwood, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 6, 1971, Ser. No. 140,925

Int. Cl. B41m *5/18*

U.S. Cl. 117—1.7 **7 Claims**



In the disclosed method for making a composite master capable of producing both visible and invisible images on a copy or receptor sheet, a first and second set of infrared absorptive images are entered on the obverse, uncoated surface of the master and mirror image deposits of dithiooxamide (DTO) or a derivative thereof corresponding to the second set of images are entered on the reverse surface of the master. The reverse surface is coated with a dye precursor such as a gallate. A wax transfer sheet or the like is used for providing the DTO deposits. The resulting master is capable of providing both visible and invisible entries on a nickel or copper salt-coated receptor sheet by passing the master and receptor through an infrared copying machine.

3,784,395

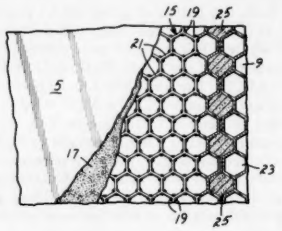
PROCESS FOR COATING PARTICULATE ADHESIVE

Alan G. McKown, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 768,675, Oct. 18, 1968, Pat. No. 3,655,818. This application Oct. 20, 1971, Ser. No. 191,104

Int. Cl. B05b *5/02*; **B44d** *1/095*

U.S. Cl. 117—17 **3 Claims**



Processes are provided for applying flowable, particulate, powdered, curable adhesive to a substrate (e.g., a metallic honeycomb structure).

3,784,396

A PROCESS FOR TREATING A SUBSTRATE WITH ETHYLENE-MALEIC ANHYDRIDE COPOLYMER POWDER

Marie-Claude Gloriod Nee Fourment, Bully-Les-Mines, and Adrien Nicco, Bethune, both of France, assignors to Ethylene Plastique, Courbevoie, France

Filed Mar. 24, 1972, Ser. No. 237,915

Claims priority, application Great Britain, Mar. 25, 1971, 7853/71

Int. Cl. B44d *1/02*, *1/44*

U.S. Cl. 117—21 **11 Claims**

A process for treating the surface of a material is provided which comprises treating the surface with a powder of a statistical copolymer of ethylene and maleic anhydride having a particle size of between 0.5μ and 400μ and possessing, in the dispersed state, on its particles, at least one crosslinking agent for the copolymer, which contains as reactive groups one, two, three or four alcoholic-OH groups and at least one amino or amido group, in an amount from 0.05 to 6 reactive groups per anhydride group present in the copolymer, and then bringing the powder to a temperature of between 110° and 300°C.

3,784,397

IMAGING SYSTEM

Masamichi Sato, Asaka, and Osamu Fukushima, Tokyo, both of Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 29, 1971, Ser. No. 110,921

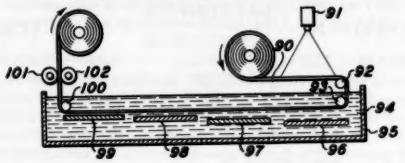
Claims priority, application Japan, Feb. 4, 1970, 45-9841

Int. Cl. G03g *13/10*, *15/10*

U.S. Cl. 117—37 LE **16 Claims**

Method for forming images by providing an electrostatographic imaging member bearing an electrostatic latent image

on a recording surface, positioning the recording surface spaced from and facing a development electrode, contacting the recording surface with toner particles whereby at least a portion of the toner particles deposit on the recording surface to form at least a partially imaged recording surface, and



maintaining the field strength of the development electrode weak during the initial period of development and then increasing the field strength of the development electrode during the latter period of development to form a substantially uniform developed image substantially free of streak, halo, edge effect, and background deposits.

3,784,398

TRANSFERRING RECORDED SIGNALS AND LATENT ELECTROSTATIC IMAGES BEFORE DEVELOPMENT

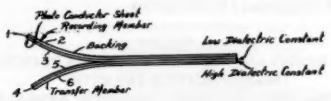
Kenneth A. Metcalfe, Lockleys, and Alwin Spencer Clements, Largs Bay, both of Australia, assignors to The Commonwealth of Australia, care of the Secretary, Department of Supply, Parkes, Canberra, Australia

Filed Aug. 16, 1971, Ser. No. 172,085

Claims priority, application Australia, Aug. 17, 1970, 2214/70

Int. Cl. G03g *13/08, 13/10, 13/16*

U.S. Cl. 117—17.5 **3 Claims**



The invention relates to a method of and means for transferring recorded signals and latent electrostatic images before development. The insulating medium which is placed over the photoconductor surface is so constructed that the dielectric constant or permittivity on one side is lower than the dielectric constant on the other side. This can be achieved by forming the insulating medium of a laminate of two differing materials of differing dielectric constants.

3,784,399

FILMS OF FLUORINATED POLYMER CONTAINING SULFONYL GROUPS WITH ONE SURFACE IN THE SULFONAMIDE OR SULFONAMIDE SALT FORM AND A PROCESS FOR PREPARING SUCH

Walther Gustav Grot, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 8, 1971, Ser. No. 178,782

Int. Cl. C08h *19/00*

U.S. Cl. 117—62.1 **17 Claims**

A film useful as an ion exchange membrane of fluorinated polymer containing pendant side chains containing sulfonyl groups which are attached to carbon atoms which have at least one fluorine atom attached thereto; one surface of the film having a majority of the sulfonyl groups of the polymer in the $-(SO_2NH)_mQ$ form wherein Q is H, NH_4 cation of an alkali metal and/or cation of alkaline earth metal and m is the valence of Q and the other surface of the film having the sulfonyl groups in the $-(SO_2)_nMe$ form wherein Me is a cation and n is the valence of the cation and processes for preparing the film.

3,784,400

METHOD OF PREPARING DRY-CLEANABLE SOIL-RESISTANT LEATHERS

Vincent Joseph Cassella, Jr., Audubon, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 37,019, May 13, 1970, Pat. No. 3,668,124. This application Mar. 22, 1972, Ser. No. 237,217

Int. Cl. C14c *9/02*; **B44d** *1/32*

U.S. Cl. 117—62.2 **6 Claims**

A fatliquor composition useful for leather treatment comprises a mixture of alkenyl substituted succinic acid or succinic acid anhydride, sulfated fatty oil, and an amine or amide. The leather is treated with an aqueous emulsion of the fatliquor composition and then with an aqueous solution of the chromium coordination complex of perfluoroalkyl-containing carboxylic acid to provide a soil and water-repellent leather that is resistant to loss of lubricity when drycleaned.

3,784,401

PROCESS FOR IMPREGNATING NON-WOVENS WITH BUTADIENE CARBOXYL POLYMER LATICES

George L. Wheelock, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Continuation-in-part of Ser. No. 739,584, May 20, 1968, abandoned. This application July 14, 1972, Ser. No. 272,006

Int. Cl. B44d *1/48*

U.S. Cl. 117—62.2 **10 Claims**

A process for obtaining nonwoven materials having improved physical properties, especially internal bond strength and resistance to delamination is provided. Nonwoven fabrics and papers impregnated with carboxyl-containing butadiene polymer latices, especially carboxylated butadienestyrene and carboxylated butadiene-acrylonitrile copolymer, are exposed to ammonia or amine vapors prior to the drying and curing operations to obtain the improved properties. Papers treated in this manner have shown a marked increase in internal bond strength.

3,784,402

CHEMICAL VAPOR DEPOSITION COATINGS ON TITANIUM

Carl D. Reedy, Jr., Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 821,506, May 2, 1969, Pat. No. 3,656,995. This application Aug. 9, 1971, Ser. No. 170,383

Int. Cl. C23c *11/00*

U.S. Cl. 117—69 **5 Claims**

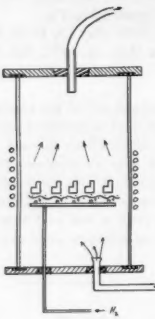
A process for coating titanium-containing substrates with a dense, adherent, chemically vapor deposited coating by initially effecting a protective, adhesion-promoting, intermediate layer on the titanium surface and subsequently depositing from the vapor phase a metal nitride, carbide, or carbonitride coating on the intermediate film. For example, a titanium article may be initially nitrided to provide a titanium nitride protective layer and titanium nitride, titanium carbide, or titanium carbonitride may subsequently be deposited from the vapor phase onto this film to provide a dense, adherent, protective coating on the titanium article. The barrier layer serves to promote adhesion between the titanium substrate and the final overlay and to prevent reaction between the substrate and such a reaction ingredient as titanium tetrachloride, which is a preferred constituent for supplying titanium in the titanium carbide, nitride, or carbonitride final coating.

3,784,403

PROCESS FOR CLADDING STEEL

Frederick A. Glaski, Torrance, Calif., assignor to Fansteel Inc., North Chicago, Ill.

Continuation-in-part of Ser. No. 117,929, Sept. 7, 1971. This application Aug. 29, 1972, Ser. No. 284,639
Int. Cl. C23c *11/00*
U.S. Cl. 117—71 M 3 Claims



A process for cladding of steels and the resulting product. A consistent and acceptable bond is obtained by providing a containment coating to prevent diffusion of the ingredients of the sub-strate into the cladding material. A desirable containment coating is one in which one of the constituents is provided by the sub-strate to provide a composite which is more stable than similar compounds of the cladding coat such as tantalum or columbium. This permits a chemical vapor deposition of the cladding without adverse reaction with surface ingredients. A further step in the process is available in the localizing of flow of gas in the deposition to bring them together just prior to contact with the shape to be coated.

3,784,404

METHOD FOR PROTECTING PAINTED WORK-PIECES IN A BAKE OVEN

Robert E. Cavanaugh, Jr., Detroit, Mich., assignor to Amchem Products, Inc., Ambler, Pa.

Filed Jan. 12, 1972, Ser. No. 217,219
Int. Cl. B44d *1/46*; F26b *3/00*
U.S. Cl. 117—97 4 Claims

A polysiloxane oven coating for use in paint baking ovens to trap undesirable solid particulate matter and thereby prevent its deposition on the baking paint film. The coating can be employed effectively without causing paint defects in the finished paint film.

3,784,405

OXYBENZOYL POLYESTER COATED ARTICLES

James Economy, Buffalo; Steve G. Cottis, Amherst, and Bernard E. Norwalk, Lancaster, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 828,693, May 28, 1969, Pat. No. 3,656,994. This application Oct. 8, 1971, Ser. No. 187,713. The portion of the term of this patent subsequent to Jan. 25, 1989, has been disclaimed.
Int. Cl. B32b *15/08*; C09d *3/68*
U.S. Cl. 117—132 C 9 Claims

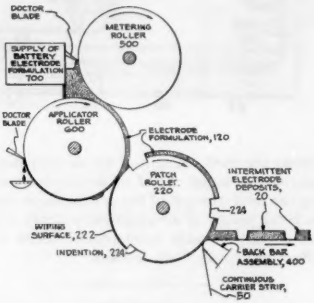
A substrate coated with an impervious film of an oxybenzoyl polyester having a molecular weight of at least about 3,500.

3,784,406

METHOD OF APPLYING BATTERY ELECTRODES ONTO CONTINUOUS CARRIER STRIP

Geza F. Kosta, Plainfield, and Anthony W. Pomper, Edison, both of N.J., assignors to ESB Incorporated, Philadelphia, Pa.

Filed Jan. 24, 1972, Ser. No. 220,136
Int. Cl. H01r *3/08*
U.S. Cl. 117—212 1 Claim



Intermittent deposits of battery electrodes are applied onto a continuous carrier strip by a rotating patch roller which has an outer wiping surface and at least one indention recessed from and interrupting the continuity of the wiping surface. The electrode formulation is wiped from the wiping surface of the patch roller onto the carrier strip to produce the electrode deposits, and the indention in the patch roller causes the electrode deposits to be intermittent. A back bar assembly causes the carrier strip to undergo a sharp change in direction at the point where the electrode formulation is wiped onto the carrier strip. The battery electrode formulation comprises a plurality of electrochemically active particles contained in and dispersed throughout a binder matrix.

3,784,407

BAKED RESISTANCE MEMBER AND THE PROCESS OF MANUFACTURE THEREOF

Hajime Shiio, Nishi, and Masami Yamaguchi, Kozakai, both of Japan, assignors to Ceramic Kagaku Yugen Kaisha, Toukai-shi, Aichi-ken, Japan

Filed May 25, 1971, Ser. No. 146,788
Claims priority, application Japan, May 26, 1970, 45/45059
Int. Cl. B44d *1/02*, *1/18*
U.S. Cl. 117—227 14 Claims

A resistance member is produced by forming a paste of zinc metal powder and synthetic resin paint, applying the paste as a film on a base and heating the base to remove the paint component and leave a baked film of zinc on the base. The zinc film is substantially non-oxidized and has a determinate resistance value. Glass powder and other metal powders may be mixed with the zinc to control the final resistance value, but the zinc must be initially present in an amount of at least 20 percent by weight.

3,784,408

PROCESS FOR PRODUCING XYLOSE

Gerald Myer Jaffe; William Szkrybalo, both of Verona, and Peter Hans Weinert, Wayne, all of N.J., assignors to Hoffmann-LaRoche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 863,358, Oct. 29, 1969, abandoned. This application Sept. 16, 1970, Ser. No. 72,898
Int. Cl. C13k *9/00*
U.S. Cl. 127—37 5 Claims

Material containing cellulose, lignins and xylan is hydrolyzed and the resulting aqueous solution is extracted with methanol to obtain crystalline xylose. The xylose may be hydrogenated to produce xylitol.

3,784,409
PROCESS FOR PURIFYING GLUCOSE SYRUPS CONTAINING FRUCTOSE

William Junior Nelson, Camanche, Iowa, and Charles William Hinman, deceased, late of Fort Madison, Iowa (Roy W. Deitchler, administrator), assignors to Standard Brands Incorporated, New York, N.Y.

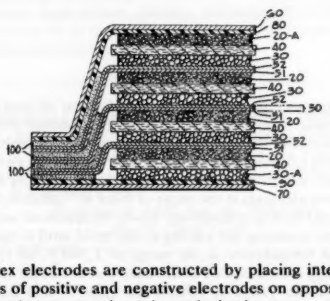
Continuation-in-part of Ser. No. 705,318, Feb. 14, 1968, abandoned. This application June 1, 1971, Ser. No. 148,915
Int. Cl. C13k *9/00*
U.S. Cl. 127—46 A **10 Claims**

A method of purifying enzymatically isomerized glucose syrups containing fructose. These syrups contain salts which contribute to the ash content, colored bodies, odoriferous materials, and other impurities. To remove these impurities, the isomerized, glucose syrups are treated with a strong acid cation exchange resin in the hydrogen form which removes therefrom a portion of the colored bodies and appreciable quantities of the metallic constituents of the salts. Following this treatment, the syrups are subjected to a carbon treatment which removes the major portion of the colored bodies and odoriferous materials. The syrups are then treated with a weak base anion exchange resin in the free base form, a strong acid cation exchange resin in the hydrogen form, and with a strong base anion exchange resin in the hydroxyl form.

3,784,410
BATTERY WITH DUPLEX ELECTRODE CONSTRUCTION USING CONTINUOUS METAL CARRIER STRIP HAVING AT LEAST ONE NONREACTIVE METAL SIDE

Bernard C. Bergum, Monona, and John A. Youngquist, Madison, both of Wis., assignors to ESB Incorporated, Philadelphia, Pa.

Division of Ser. No. 100,237, Dec. 21, 1970, Pat. No. 3,706,616. This application May 15, 1972, Ser. No. 253,650
Int. Cl. H01m *39/06*
U.S. Cl. 136—10 **4 Claims**



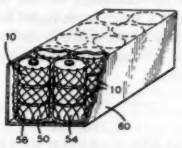
Duplex electrodes are constructed by placing intermittent deposits of positive and negative electrodes on opposite sides of a continuous metal carrier strip having two nonreactive metal sides. In another embodiment, duplex electrodes are constructed by placing intermittent deposits of positive electrodes on the only nonreactive side of the bimetal carrier strip, with the reactive side of the bimetal strip functioning as the negative electrode in the duplex electrode. The duplex electrodes are assembled into multicell batteries. The assembly preferably occurs while the duplex electrodes are structurally and electrically connected by the continuous metal carrier strip; the carrier strip is then subsequently cut between duplex electrodes to obtain structurally and electrically unconnected batteries. Alternatively, the carrier strip may be cut between duplex electrodes before those electrodes are assembled into multicell batteries.

The metal carrier strip may comprise: (1) a unimetal which is nonreactive to the positive and negative electrodes and to the electrolyte within the battery; (2) a bimetal in which the metal adjacent the positive electrode is nonreactive with respect to that electrode and the metal adjacent the negative electrode is nonreactive with respect to that electrode; (3) a trimetal whose outer two layers are nonreactive as in (2); and, (4) a bimetal or trimetal in which the metal adjacent the positive electrode is nonreactive with respect to that electrode and in which the other metal functions as the negative electrode in the battery. The particular metals employed will depend upon the electrochemical system used in the battery.

3,784,411
ELECTRIC CELL BATTERY WITH PLASTIC WEBBING SPACER FOR FAST AND COMPLETE EPOXY ENCAPSULATION

Frank Leonard Ciliberti, Jr., Ossining, N.Y., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed July 6, 1971, Ser. No. 159,933
Int. Cl. H01m *23/00, 21/00*
U.S. Cl. 136—87 **15 Claims**



A cell spacer consisting of a grid of polypropylene filaments, providing a non-friction, non-wetting spacer for cells in a container, with free runways in spacer, and three-dimensional adjustability of spacer to permit epoxy flow along, around and under spacer to form complete epoxy closure, and battery made with such spacers, and method of epoxy flow control.

3,784,412
METHOD FOR THE MANUFACTURE OF POWDERED TUNGSTEN CONTAINING ELECTRODE MATERIAL

Konrad Mund; Gerhard Richter, and Magdalena Wenzel, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Munchen, Germany

Filed Feb. 17, 1972, Ser. No. 227,309
Claims priority, application Germany, Feb. 22, 1971, 2108457
Int. Cl. H01m *13/04*
U.S. Cl. 136—122 **18 Claims**

Method for making electrode material containing tungsten in powdered form. A tungsten compound selected from a halide or oxide, a tungstic acid, a tungstate, a thiotungstate is mixed with a solid or liquid cokable substance. A solution of such organic substance may also be used. The organic substance in the mixture is precoked and the tungsten carburized or sulfidized.

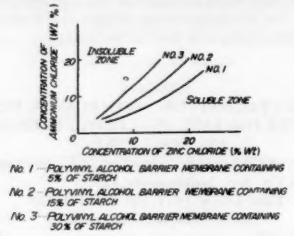
3,784,413
DRY CELLS

Jun Watanabe, Osaka; Susumu Hosoi, Neyagawa; Masahiro Kuwazaki, Osaka; Akira Ota, Osaka; Toshikatsu Takata, and Junichi Asaoka, both of Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 843,598, July 22, 1969, Pat. No. 3,647,552. This application Aug. 13, 1971, Ser. No. 171,594. The portion of the term of this patent subsequent to Mar. 7, 1989, has been disclaimed.
Int. Cl. H01m *3/00*
U.S. Cl. 136—131 **7 Claims**

A dry cell of excellent performances, particularly in discharge characteristics, in which an ion-permeable barrier

membrane is interposed between a cathode mixture and a negative electrode-consistuting zinc casing and more specifically between the cathode mixture and a paste layer, said membrane being of such a character that it blocks the transfer of water and a paste from the paste layer side to the cathode



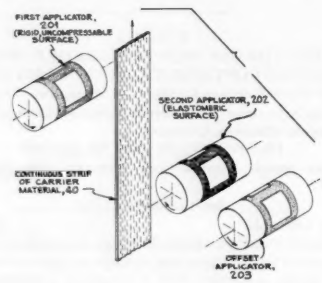
mixture side without being dissolved during storage and in the earlier stages of discharge of the cell, whereas it is dissolved to prevent a sharp increase of the zinc ion concentration in the vicinity of the paste layer in the latter stage of discharge of the cell when the zinc ion concentration in the electrolyte is increased.

3,784,414

BATTERY SEALANT CARRIER HAVING ADHESIVE PATCHES IMPREGNATED THEREIN AND A METHOD FOR MAKING IT

William R. Macaulay, Madison; Ralph H. Feldhake, Verona, both of Wis.; Dale G. Higgins, East Brunswick, and Richard C. Santa Maria, Edison, both of N.J., assignors to ESB Incorporated, Philadelphia, Pa.

Filed June 1, 1972, Ser. No. 258,663
Int. Cl. H01m *3/04*
U.S. Cl. 136—175 **22 Claims**


FIRST APPLICATOR, 201 (RIGID UNCOMPRESSABLE SURFACE)
SECOND APPLICATOR, 202 (ELASTOMERIC SURFACE)
CONTINUOUS STRIP OF CARRIER MATERIAL, 40
OFFSET APPLICATOR, 203

A battery sealant carrier is impregnated with adhesive patches each of which is in the form of a closed loop. The surfaces of the adhesive patches rise above the surfaces of the carrier on at least one and preferably both sides of the carrier. The patches are produced by passing the carrier between a pair of applicators, the first of which has a surface that is sufficiently rigid and uncompressible so that it does not deform and the second of which has a surface that is sufficiently elastomeric so that it deforms during adhesive application. Preferably the two applicators apply adhesive to the carrier simultaneously. The adhesive patches applied by the second applicator are preferably applied at a higher viscosity than those applied by the first applicator. Preferably the sealant carrier is also the battery separator material, in which case there is an area of separator material inside each adhesive patch into which the adhesive has not been impregnated; alternatively, the sealant carrier may have a void area inside each adhesive patch, with the void area being provided to receive a piece of battery separator material.

3,784,415

METHOD OF MAKING A HIGH VOLTAGE DEPOSITED FUEL CELL COMPONENT

Ralph E. Hopkins, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 110,499, Jan. 28, 1971, Pat. No. 3,717,506. This application Aug. 3, 1972, Ser. No. 277,546
Int. Cl. H01m *27/02*
U.S. Cl. 136—175 **1 Claim**

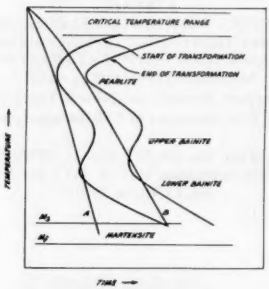
This invention pertains to a method of making an improved high voltage deposited fuel cell component. The improved fuel cell component is especially adaptable to high voltage, high power applications in that a large number of planar cell assemblies may be stacked in a compact manner to afford a relatively high power density.

3,784,416

MANUFACTURE OF WHITE CAST IRON

Barry John Davies, Burlington, Ontario, Canada, assignor to Canron Limited, Montreal, Quebec, Canada

Continuation-in-part of Ser. No. 93,754, Nov. 30, 1970, abandoned. This application Sept. 29, 1972, Ser. No. 293,339
Int. Cl. C21d *5/04*; **B22d** *25/00*
U.S. Cl. 148—3 **6 Claims**



An improved method for the production of martensitic and/or lower bainitic white cast iron. The method of this invention includes the steps of preparing a melt of molten cast iron having a chromium content in the range of 0.5 percent to 15 percent, a total additional content of hardenability increasing alloying elements in the range of trace to 3 percent, casting into a mold having a maximum cavity thickness of about 2.5 inches and retaining the casting in the mold until it cools to a shake-out temperature in the range of 1,700°F. to 1,950°F.. The casting is then cooled after shake-out in still air to a temperature in the range of 1,325°F. to 1,650°F. and thereafter the casting is quenched when at a temperature within the range of 1,325°F. to 1,650°F. by immersing it in the liquid quenching medium at a temperature above 80°F. so as to cool the casting at a rate of cooling sufficient to prevent the formation of pearlite without cracking or distorting the casting.

3,784,417

SURFACE CONVERSION TREATMENT FOR MAGNESIUM ALLOYS

James A. Brown, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 89,130, Nov. 12, 1970, abandoned. This application Oct. 26, 1971, Ser. No. 192,558
Int. Cl. C23f *7/16*
U.S. Cl. 148—6.15 R **59 Claims**

An aqueous composition for surface conversion treatment of magnesium and magnesium alloys prior to application of a

painted or photoresist coating is described. The composition comprises a water solution of about 9.4 to about 19.5 grams per liter NH_4^+; about 50 to about 103 grams per liter PO_4^{---}; about 1.0 to about 2.8 grams per liter Ca^{++}; and a total of about 1.9 to about 4.8 grams per liter of ions selected from the group consisting of Cl^-, NO_3^-, and SO_4^{--}, and is characterized by having a pH of about 3.0 to about 4.5.

3,784,418

PROCESS FOR THE MANUFACTURE OF COLD-ROLLED SHEETS FROM A RUST-RESISTANT, FERRITIC STEEL ALLOY CONTAINING CHROMIUM AND MOLYBDENUM

Alfred Randak, and Karl Michel, both of Huttental-Geisweid, Germany, assignors to Stahlwerke Sudwestfalen AG, Huttental-Geisweid, Germany

Filed Nov. 3, 1970, Ser. No. 86,610

Claims priority, application Germany, Nov. 3, 1969, P 19 55 026.6

Int. Cl. C21d *9/48*

U.S. Cl. 148—12 **13 Claims**

Cold-rolled strip and sheets are made from a special steel alloy containing chromium and molybdenum by subjecting hot-rolled strip formed from the alloy to multi-stage annealing at controlled temperatures and thereafter cold rolling and annealing after each cold rolling step.

3,784,419

PROPELLANT COMPOSITION CONTAINING A NICKLE-SILVER COMPOSITE

Robert P. Baumann, Dover; Eugene F. Bozza, Rockaway, both of N.J., and Gardner S. Hunt, Freeport, Maine, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 120,683, March 3, 1971, abandoned. This application June 30, 1972, Ser. No. 267,737

Int. Cl. C06b *19/00*

U.S. Cl. 149—2 **4 Claims**

Solid propellants compositions and method for the preparation thereof, comprising the addition of a staple to a wetted propellant composition, casting, subjecting the casting to a magnetic force in order to radially orient the staples therein, solidifying and recovering the product.

3,784,420

THERMALLY STABLE HIGH DENSITY-IMPULSE ENERGETIC COMPOSITION OF MATTER

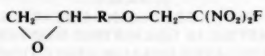
Milton B. Frankel, Tarzana, and George A. Lo, Canoga Park, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 9, 1968, Ser. No. 785,024

Int. Cl. C06b *15/00*

U.S. Cl. 149—22 **18 Claims**

This invention is concerned with a novel, energetic, thermally stable, dense binder system suitable for formulating energetic compositions of matter wherein said binder system comprises the energetic prepolymer of a compound of the formula



in which R is alkylene of 1 to 4 carbon atoms and the energetic plasticizer bis-(dinitrofluoroethyl)-formal. The energetic composition also contains at least one fuel and at least one oxidizer homogeneously dispersed in and held together by said binder system.

3,784,421

SLURRY EXPLOSIVES CROSS-LINKED WITH A COMPOUND OF TELLURIUM VI

William Allan Craig, Glasgow, Scotland, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 196,797, Nov. 8, 1971, Pat. No. 3,734,864.

This application Sept. 18, 1972, Ser. No. 289,637

Claims priority, application Great Britain, Nov. 30, 1970, 56694/70

Int. Cl. C06d *5/06, 5/10*

U.S. Cl. 149—29 **7 Claims**

Slurry explosives and aqueous gels therefor containing, as thickener, a macromolecular compound containing vicinal cis-hydroxyl group (e.g., guar gum) cross-linked with compound of tellurium VI.

3,784,422

2,3-BIS(DIFLUOROAMINO) PROPYL 2,2-DINITROPROPYL CARBONATE, USEFUL IN PROPELLANTS

Albert L. Rocklin, Walnut Creek, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Oct. 12, 1970, Ser. No. 81,637

Int. Cl. C06b *15/00;* **C06c** *69/00*

U.S. Cl. 149—88 **5 Claims**

The novel allyl 2,2-dinitropropyl carbonate and the conversion thereof to the novel 2,3-bis(difluoroamino)propyl 2,2-dinitropropyl carbonate useful as a high energy plasticizer of polymeric binders for solid propellant systems.

3,784,423

CRYSTALLINE BERYLLIUM HYDRIDE

Paul Kobetz, Baton Rouge, La., and Leonard M. Niebylaski, Birmingham, Mich., assignors to Ethyl Corporation, New York, N.Y.

Filed Aug. 24, 1964, Ser. No. 392,677

Int. Cl. C06b *15/00;* **C01b** *6/04;* **C01l** *6/24*

U.S. Cl. 149—109 **8 Claims**

1. A crystalline beryllium hydride-containing composite which consists essentially of from about 99.5 to about 80.0 mole percent of beryllium hydride and from about 0.5 to about 20.0 mole percent of lithium hydride.

4. A crystalline beryllium hydride-containing composite which consists essentially of from about 0.5 to about 20.0 mole percent of a compound selected from the group consisting of lithium hydride and lithium aluminum hydride and from about 99.5 to about 80.0 mole percent of beryllium hydride and which is characterized by a density exceeding 0.75 gram per cc and by intense X-ray diffraction lines at $d = 3.78$ and $d = 2.95$.

3,784,424

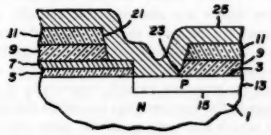
PROCESS FOR BORON CONTAINING GLASSES USEFUL WITH SEMICONDUCTOR DEVICES

Shao-Yuen S. Chang, Syracuse, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Sept. 27, 1971, Ser. No. 184,093

Int. Cl. C03c *15/00;* **H01l** *7/50*

U.S. Cl. 156—15 **4 Claims**



A glass containing about 5 percent or more by weight boron oxide may be etched using fluoroboric acid as an etchant. The

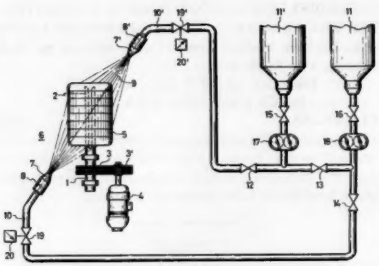
fluoroboric acid etchant is advantageously employed becuase of its comparatively low acidity. The boron oxide containing glass may be utilized as a boron diffusion source in the fabrication of semiconductor devices and may be covered by a barrier layer, such as phosphosilicate glass.

3,784,425

PROCESS AND APPARATUS FOR THE PRODUCTION OF PLASTIC-SHEATHED TAMPONS

Wilhelm Schuster, Frankfurt, Germany, assignor to Vereinigte Papierwerke Schickedanz & Co., Nurnberg, Postfach, Germany

Filed Nov. 8, 1971, Ser. No. 196,537
Int. Cl. B32b *31/14*; **B65h** *81/06*; **A61f** *13/20*
U.S. Cl. 156—83 **3 Claims**



A process is disclosed for the production of plastic-sheathed or covered tampons of fibrous organic materials, especially for feminine hygiene, wherein a fiberbody is made selected from the group consisting of unpressed and prepressed fiberbodies, a porous coating of water-insoluble plastic is sprayed or spun around the fiberbody, and the fiberbody and covering are pressed to form the tampon.

3,784,426

METHOD OF BUILDING TIRES

Edwin S. Woodhall; Paul E. Appleby, both of Cuyahoga Falls, and John W. Touchette, North Canton, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 99,428, Dec. 18, 1970, Pat. No. 3,698,987.
This application June 26, 1972, Ser. No. 266,025
Int. Cl. B29h *17/12, 17/14, 17/16*
U.S. Cl. 156—132 **4 Claims**

A tire building machine comprising an expansible drum on which tires are built. The drum includes a pair of sets of segments movable radially of the drum axis and which are covered with a rubber sleeve and are disposed between two sets of fingers which are also movable radially of the drum axis. The fingers are designed to hold a pair of wire beads concentrically of the longitudinal axis of the building drum in equidistant spaced relation from the centerplane of the drum. The segments are movable radially outwardly of the drum to form shoulders in the carcass plies on which the beads may be seated, after which the turn-up of the plies and tie-in of the wire beads are made, and tread and sidewall are applied to complete the uncured tire. The fingers and segments have rigid material engaging surfaces. The center section of the building drum intermediate the segments has a substantially rigid material supporting surface and, together with the segments, provides a firm working surface for building the tire.

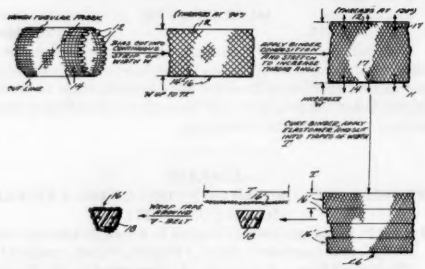
The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawings and the following detailed description.

3,784,427

METHOD OF MAKING AND TREATING BIAS CUT FABRIC

Thomas Franklin Griffin, Kernersville, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed June 3, 1970, Ser. No. 42,914
Int. Cl. B29h *7/22*
U.S. Cl. 156—139 **6 Claims**



A fabric suitable for V-belt covers and hose reinforcing is made by bias-cutting a tubular woven fabric into a continuous strip, stretching the continuous strip in the width direction as with a pin tenter frame to increase the angle between warp and filling to greater than 90°, applying an elastomeric coating, and longitudinally slitting the strip into a plurality of narrower tapes which are then wrapped around a V-belt core in a conventional manner or used as hose reinforcing.

3,784,428

METHOD FOR MAKING CARBON FILAMENT TAPES

Donald James Willats, Fillongley, and Peter Ernest Morgan, Coventry, both of England, assignors to Courtaulds Limited, London, England

Filed May 7, 1971, Ser. No. 141,391
Claims priority, application Great Britain, May 12, 1970, 22,856/70
Int. Cl. B31c ; B65h *81/00*
U.S. Cl. 156—174 **4 Claims**

A process for making a tape of filaments which comprises winding at least one bundle of filaments, for example carbon filaments, helically on a mandrel to produce a multilayer structure of filaments of even thickness, and helically cutting the filaments in the same sense as they are wound to produce a tape of filaments. Apparatus for performing the process is also described.

3,784,429

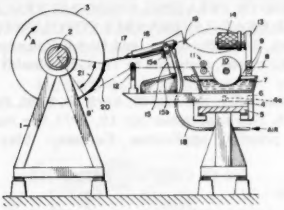
METHOD FOR PRODUCING ROTATIONALLY SYMMETRICAL GLASS FIBER REINFORCED LAMINATED HOLLOW STRUCTURES

Manfred Muller, Wuppertal-Barmen, Germany, assignor to Akzona Incorporated, Asheville, N.C.

Filed July 22, 1971, Ser. No. 165,127
Claims priority, application Germany, July 23, 1970, P 20 36 513.3
Int. Cl. B65h *81/00*
U.S. Cl. 156—175 **8 Claims**

Method and apparatus for producing laminated hollow structures having at least one glass fiber reinforced resinous

layer wherein there are simultaneously applied to a winding core or rotationally symmetrical form (a) a filamentary fleece or web of a fibrous organic polymer such as continuous polyester filaments, and (b) a winding layer of glass fiber roving or rovings impregnated with a curable thermosetting synthetic resin such as unsaturated polyester resins or epoxy resins. The apparatus includes, in addition to means for



wrapping the roving or rovings of glass fibers, a blowing nozzle means for the continuous deposition of the fibrous fleece or web at a displaced angle with reference to the winding application of the glass fiber roving material. The products of the invention are useful as storage vessels, pipes, tubes, cylinders, fittings and the like, e.g. as frequently required in the petrochemical industry.

3,784,430

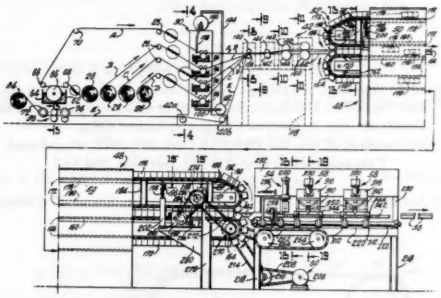
METHOD FOR MANUFACTURING CORRUGATED ANGLE MEMBERS

Jack A. Gilbert, and Stanley Franklyn, both of Clifton, N.J., assignors to Container Company of New York, Irvington, N.J.

Division of Ser. No. 782,209, Dec. 9, 1968, Pat. No. 3,652,367. This application Dec. 2, 1970, Ser. No. 94,327

Int. Cl. B31f *7/00*

U.S. Cl. 156—200 **4 Claims**



A method for manufacturing corrugated angle members. These members are made of heavy paper, for example, and serve as protective reinforcements in relatively large packages containing appliances and the like, so that the corrugated angle members by engaging the appliances within the container of the package will protect the appliances against damage. A plurality of corrugated plies are glued to each other while being longitudinally angled to a gradually increasing extent by a forming means which provides the glued-together corrugated plies with a preselected angular cross section. Then the angled corrugated structure is dried while conveyed by a conveyer means through a heat tunnel. Thereafter, the corrugated structure is cut by a cutting means to preselected lengths.

3,784,431

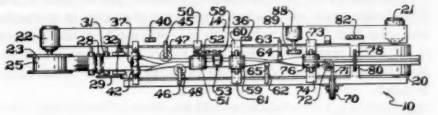
MANUFACTURE OF WINDSHIELD WIPER BLADES

Mathew Kuts, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Division of Ser. No. 135,092, April 19, 1971, Pat. No. 3,697,356. This application June 26, 1972, Ser. No. 266,149

Int. Cl. B31f *7/00*

U.S. Cl. 156—201 **5 Claims**



The method of making a distendable stationary window wiper blade which is suitable for cleaning a movable window as in station wagons. The blade is distendable by fluid pressure to simultaneously press the wiper blade against the window and spray liquid against the window to provide means for lubricating and wetting the window. Such wiper blade is made by encasing a tube with fabric reinforced material, folding such fabric material over the tube to cover such tube completely, adhering a thin bead along the central length thereof and cutting such blade into predetermined lengths.

3,784,432

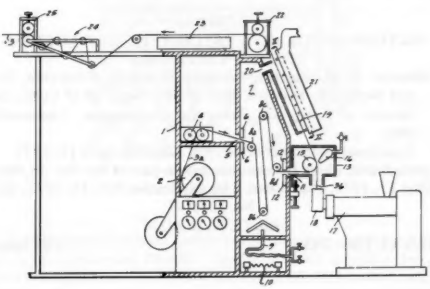
METHOD OF MAKING A FLEXIBLE CLOSURE

Takashi Noguchi, Seisan Nippon Sha, Ltd. New Kohjim-achi Bldg. 3, 5-Chome, Tokyo, Japan

Filed Sept. 7, 1971, Ser. No. 178,087

Int. Cl. B29c *23/00*

U.S. Cl. 156—244 **11 Claims**



A mechanism and method of attaching to a laminated plastic sheet a fastener profile wherein the preformed sheet is removed from a roll and passed through a heating chamber having controlled humidity and thereafter passing said sheet over a roll which forms a joining zone with an extruded plastic profile strip fed onto the sheet with a jet of air directed thereagainst, and the joined sheet and strip thereafter passing through a chamber where the strip is cooled and the heat in the sheet is maintained.

3,784,433

REINFORCED COMPOSITES

Edward William Garnish, Saffron Walden, and Barry James Hayes, Little Eversden, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 2,441, Jan. 12, 1970, abandoned. This application Mar. 30, 1972, Ser. No. 239,765

Claims priority, application Great Britain, Jan. 17, 1969, 2880/69

Int. Cl. B32b *31/12*

U.S. Cl. 156—276 **11 Claims**

Composites of unidirectional carbon fibers and a thermosettable resin are made by applying the resin as a continuous solid film to the carbon fibers, applying heat and pressure so that the resin flows about the fibers and forms a coherent structure, and then converting the resin into its solid, fusible B-stage.

3,784,434

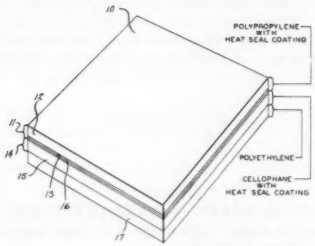
METHOD OF LAMINATING PACKAGING FILM

George C. Paisley, Millbrae, and Fred G. Tier, Sunnyvale, both of Calif., assignors to Milprint, Inc., Milwaukee, Wis.

Continuation of Ser. No. 717,844, March 1, 1968, abandoned. This application Mar. 8, 1971, Ser. No. 122,205

Int. Cl. B32b *31/06, 31/12*

U.S. Cl. 156—280 **1 Claim**



A multiple layer laminated packaging film incorporating cellophane coated on only one side with a heat sealable coating, heat sealable polyethylene applied to the uncoated side of the cellophane, and a polypropylene exterior layer joined to the coated side of the cellophane by means of a heat sealable coating on the inner surface of the polypropylene.

3,784,435

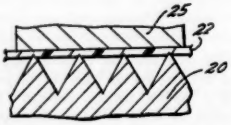
METHOD OF FORMING PATCH-TYPE SELF-LOCKING SCREW FASTENERS

Mansour A. H. Bagheri, Downey; Walter P. Fitzgerald, Jr., and Beatrix Y. Sanders, both of San Diego, all of Calif., assignors to Long-Lok Fasteners Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 126,882, April 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 36,960, May 13, 1970, abandoned. This application Feb. 14, 1972, Ser. No. 226,147

Int. Cl. B32b *31/26*

U.S. Cl. 156—293 **58 Claims**



Thermoplastic polymer locking elements are formed on threaded fasteners to provide a range of self-locking torque characteristics. The thermoplastic resins are of the type that crystallize during cooling from the molten state.

The crystallizable polymers are preferably applied in film form to preheated threaded fasteners. By correlation of the preheat temperature, the length of time during which the molten polymer is allowed to melt and flow onto the thread surfaces, and the rate of cooling of the assembly, the geometry of the locking element and the degree of crystallinity of the polymer are controlled.

3,784,436

METHOD OF TREATING A WOOD SURFACE WITH LINEAR HEAT-HARDENABLE COPOLYMERIZATE

Jurgen Fock, Essen-Bredeney, and Ulrich Holtschmidt, Essen, both of Germany, assignors to Th. Goldschmidt AG, Essen, Germany

Division of Ser. No. 31,748, April 24, 1970, Pat. No. 3,694,418. This application Oct. 18, 1971, Ser. No. 190,397

Claims priority, application Germany, May 6, 1969, 1922942

Int. Cl. C09j *7/02;* **B32b** *27/10*

U.S. Cl. 156—334 **2 Claims**

This invention relates to a linear heat-hardenable copolymerizate, and to a method of treating a wood surface with a foil of the said copolymerizate, the copolymerizate having a limiting viscosity of $\eta = 0.7$ to 3.0 (100 ml · g^{-1}) measured in toluene at 20° C., and comprising

70 to 94 mole percent of a compound selected from the group consisting of styrene or at least one monomer having the formula

$$CH_2=C(R_1)-COOR_2$$

in which R_1 is selected from the group consisting of hydrogen and a methyl group, and R_2 is an alkyl group having one to four carbon atoms,

2 to 15 mole percent of at least one compound selected from the group consisting of maleic anhydride and itaconic acid anhydride, and

4 to 15 mole percent of at least one compound selected from the group consisting of acrylic acid glycidyl ester and methacrylic acid glycidyl ester.

3,784,437

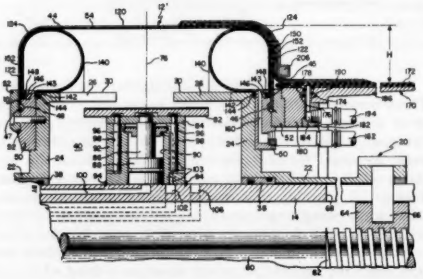
TIRE BUILDING APPARATUS

Paul E. Appleby, Cuyahoga Falls; Denver C. Folden, Akron, and Donald C. Kubinski, Seville, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 880,522, Nov. 28, 1969, abandoned. This application Dec. 2, 1971, Ser. No. 204,167

Int. Cl. B29h *17/16, 17/22*

U.S. Cl. 156—401 **37 Claims**



A tire building apparatus having an expandable-collapsible drum for which an elastic tubular membrane forms the drum

surface, and a pair of annular members disposed for radial and axial movement on and relative to a pair of rigid axially movable end members cooperable with the membrane to expand the drum surface to a high crown and an expanded cylindrical stiffly supported building surface.

3,784,438

APPARATUS FOR WRAPPING BOTTLE NECKS

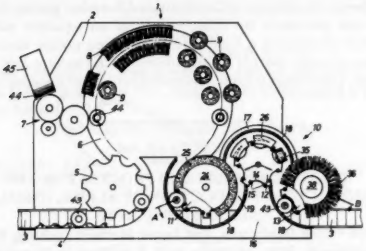
Karl Dullinger, Neutraubling, Germany, assignor to Hermann Kronseder, Neutraubling, Germany

Filed Oct. 27, 1971, Ser. No. 192,955

Claims priority, application Germany, Nov. 13, 1970, 2055834

Int. Cl. B65b *61/24*; **B65c** *3/18*

U.S. Cl. 156—487 **11 Claims**



Apparatus for wrapping bottle necks, preferably with foil wrappers. The apparatus includes wrapper applying mechanism and following treatment apparatus to shape and conform the wrapper to the bottle neck and crown. The treatment apparatus includes a series of pressing and smoothing tools which are arranged on a serpentine path and conveyor means for advancing the bottles on said serpentine path past said tools. The wrapper shaping and conforming tools are desirably arranged on circular arcs and the conveyor desirably comprises star wheels which convey the bottles on said arcs for engagement with said shaping and conforming tools.

3,784,439

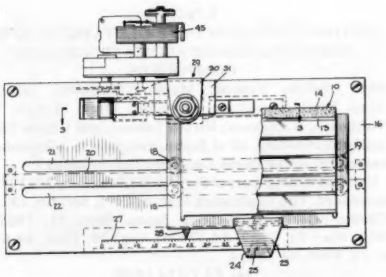
MACHINE FOR FORMING AND APPLYING INDEX TABS TO FILE CARDS

Isidore Dorman, Whitestone, N.Y., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jan. 31, 1972, Ser. No. 221,896

Int. Cl. B32b *31/20, 31/18*

U.S. Cl. 156—518 **10 Claims**



A machine for automatically forming index tabs and for applying the tabs to file cards at selected points along the upper margin thereof. A file card to be tabbed is supported on a carriage, the margin of the card overhanging the carriage. The carriage is shiftable along a platform with respect to a linear scale, to align a selected point on the margin with a tab applicator station. At the station, the margin partially overlies the upper end of a hole in a die plate below which is disposed a strip of tab material. A reciprocating die punch cooperating with the die plate, acts in passing through the die hole to excise a tab from the strip and to press it against the underface of the margin whose upper face is backed by an anvil. To effect bonding of the tab to the card margin, the tab material may be provided with a pressure-sensitive layer or a hot-melt coating, in which latter event the anvil is heated to activate the coating when the margin is sandwiched between the pressed tab and the anvil.

3,784,440

ALUMINUM-CLAD PLASTIC SUBSTRATE LAMINATES

John H. Grunwald, New Haven; Eugene D. D'Ottavio, Thomaston; Harold L. Rhodenizer, Bethlehem, and Michael S. Lombardo, Waterbury, all of Conn., assignors to MacDermid, Incorporated, Waterbury, Conn.

Division of Ser. No. 889,472, Dec. 31, 1969, Pat. No. 3,620,933. This application Nov. 9, 1971, Ser. No. 197,161

Int. Cl. B32b *15/08, 15/20*; **H05k** *1/00*

U.S. Cl. 161—185 **7 Claims**

Plastic parts are formed against an anodically treated aluminum surface by molding, laminating, etc., to produce laminates useful, after removal of or separation from the aluminum, in providing a plastic surface of a high energy level promoting greater adhesion of deposited metal conductor circuits in the additive process of making printed circuit boards.

3,784,441

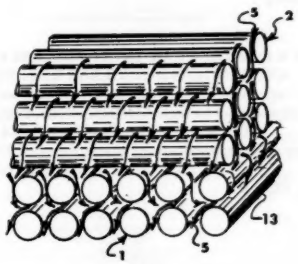
COMPOSITE STRUCTURE

Charles E. Kaempen, Orange, Calif., assignor to Kaempen Industries, Inc., Orange, Calif.

Filed July 12, 1971, Ser. No. 161,536

Int. Cl. B32b *5/12*

U.S. Cl. 161—58 **19 Claims**



A corrugated laminate comprises at least two superimposed plies of continuous filament strands bonded together by a hardened plastic resin. The plies are biaxially pre-tensioned prior to hardening of the resin which impregnates and bonds the strands together in a generally concave parabolic configuration at each corrugation. The laminate finds particular application to tubular structures, such as sewer pipe liner and underground tanks, which contribute to the control and improvement in the quality of the nation's environment.

The method and apparatus for making the laminate in the form of a desired composite structure comprises placing a first ply of unidirectional continuous filament strands upon one or more longitudinally spaced pairs of a gapped forming structure so that the ply bridges each forming gap. After the ends of the first ply are held in place, they are pressed and deflected

into the forming gaps by a superimposed second ply containing pre-tensioned, unidirectional continuous filament strands oriented approximately at right angles to the filament strands of the first ply. The parabolic configuration formed at each corrugation of the laminate results from a substantially uniform pressure which is applied to the first ply by the second or deflecting ply. The filament strands of each laminate ply are thoroughly impregnated with the liquid resin which subsequently hardens to bond and maintain the laminate in its corrugated form.

3,784,442

ALKALI METAL ALUMINO SILICATES, METHODS FOR THEIR PRODUCTION AND COMPOSITIONS THEREOF

Lowell E. Hackbarth, Bel Air, Md., and Joseph T. Crockett, Auburn, Ala., assignors to J. M. Huber Corporation, Borger, Tex.

Division of Ser. No. 112,469, Feb. 3, 1971, which is a continuation-in-part of Ser. No. 730,892, May 21, 1968, Pat. No. 3,582,379. This application July 20, 1972, Ser. No. 273,673The portion of the term of this patent subsequent to June 1, 1988, has been disclaimed.

Int. Cl. D21h *3/82*

U.S. Cl. 162—181 C **1 Claim**

The subject matter of the following specification concerns the production of finely divided materials useful as pigments, moisture conditioners, paper fillers, and in rubber reinforcement and the like. Considering present economics, perhaps the most practical embodiment of the subject matter employs the reaction of a soluble sodium silicate and aluminum sulfate in producing precipitates commonly known and identifiable as sodium alumino silicates, the precipitate being ultimately collected as a dried particulate material of sub-micron particle size. The disclosed process involves conducting this general type of reaction in the presence of calculated quantity of sodium sulfate from the outset of the reaction whereby economics are improved and highly refined modifications in the characteristic of the final materials become obtainable. The reaction may be varied according to several conditions, such as pH, temperature, concentration, manner of feeding materials and the like whereby to better adapt the new materials to highly specialized needs, such as in rubber compounding and paper production.

3,784,443

DEVICE FOR THE LEAK-TIGHT ASSEMBLY OF HEAT EXCHANGERS IN NUCLEAR REACTORS

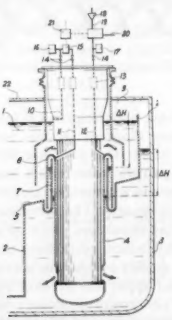
Michel Vercasson, La Celle-Saint Cloud, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 4, 1971, Ser. No. 168,924

Claims priority, application France, Aug. 7, 1970, 70.29197

Int. Cl. G21c *13/02, 13/06;* **F28d** *1/06*

U.S. Cl. 176—63 **6 Claims**



A leak-tight passage is provided for a heat-exchanger shell within an opening formed in the primary vessel wall of a fast reactor. The opening comprises a vertical cylindrical collar surmounted by an annular bell which is rigidly fixed to the heat-exchanger shell and shaped so as to constitute in conjunction with the collar an annular space between the cylindrical collar an annular bell which is maintained unprimed by injecting a gas under pressure into this space.

3,784,444

PROCESS FOR PRODUCING 2-SUBSTITUTED 6-AMINO PURINE RIBOTIDES

Kiyoshi Nakayama, Sagamihara, and Haruo Tanaka, Machida, both of Japan, assignors to Kyowa Hakko Kogyo Co. Ltd., Tokyo, Japan

Filed Oct. 21, 1971, Ser. No. 191,158

Int. Cl. C12d *13/06*

U.S. Cl. 195—28 N **7 Claims**

Ribosyl phosphates of 2-substituted 6-amino purine derivatives are produced by fermentation of an aqueous nutrient medium containing a 2-substituted 6-amino purine derivative or the riboside thereof by organisms of the genera Brevibacterium, Corynebacterium, Arthrobacter and Micrococcus.

3,784,445

CULTURE MEDIUM AND PROCESS FOR THE BIOLOGICAL PRODUCTION OF ALPHA, OMEGA-ALKANEDIOIC ACID

Robert Victor Dahlstrom, and James Herbert Jaehnig, both of Manitowoc, Wis., assignors to E. I. duPont de Nemours and Company, Wilmington, Del.

Filed Dec. 30, 1971, Ser. No. 214,379

Int. Cl. C12b *1/00*

U.S. Cl. 195—28 R **5 Claims**

An aqueous culture medium comprising (1) 3 to 35 grams per liter of alkali metal, calcium nitrate, magnesium nitrate, strontium nitrate and/or beryllium nitrate; (2) 0.3 to 10 grams per liter of alkali metal phosphate; (3) 1 to 15 grams per liter of an alkali metal acetate, calcium acetate, magnesium acetate, strontium acetate and/or beryllium acetate; and (4) a nutrient source; and a process for the production of an alpha,omega-alkanedioic acid of 10 to 16 carbon atoms comprising (1) introducing a mutated strain of Corynebacterium into a composition which has a pH of from 6 to 9 and which comprises 1 to 50 percent by volume of an n-alkane of 10 to 16 carbon atoms and a complemental amount of the culture medium above; (2) maintaining the composition at a temperature between 20° and 45°C. for 48 t0 96 hours; and (3) separating the alpha,omega-alkanedioic acid from the resulting mixture.

3,784,446

METHOD OF PRODUCING L-GLUTAMIC ACID BY FERMENTATION OF AROMATIC ORGANIC COMPOUNDS

Hiroshi Nishida, Yamato; Masao Yamamoto, Yatsushiro; Atsuo Kitai, Kamakura; Asaichiro Ozaki, Tokyo; Yukio Nishimura, Kamakura; Hiroto Takemi, and Chimo Takemi, both of Yatsushiro, all of Japan, assignors to Ajinomoto Co., Inc. and Sanraku Ocean Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 13,830, Feb. 24, 1970, abandoned. This application Mar. 8, 1972, Ser. No. 232,950

Claims priority, application Japan, Mar. 11, 1969, 44-17974; Mar. 11, 1969, 44-17975; Aug. 20, 1969, 44-65326; Dec. 10, 1969, 44-98634

Int. Cl. C12d *13/06*

U.S. Cl. 195—30 **8 Claims**

L-Glutamic acid is produced by culturing glutamic acid producing strains of Brevibacterium, Corynebacterium, Microbacterium, and Micrococcus on media which provide catechol, benzyl alcohol, benzoic acid, hydroxybenzoic acid,

phenylacetic acid, protocatechuic acid, phenol and other aromatic compounds as at least 70 percent (by weight) of the carbon sources available during fermentation.

3,784,447

MYCAROSYL MACROLIDE ANTIBIOTICS

Robert John Theriault, Kenosha, Wis., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 17, 1972, Ser. No. 246,095
Int. Cl. C12k *1/00*
U.S. Cl. 195—81 **6 Claims**

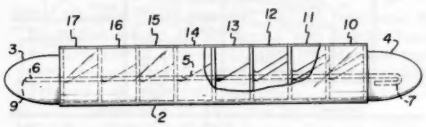
Covers the desisovaleryl derivative of niddamycin. Also covers a method of performing the microbial conversion of niddamycin, magnamycin A, magnamycin B, leucomycin A_1 and leucomycin A_3 to the corresponding desisovaleryl derivatives.

3,784,448

DIAGNOSTIC DEVICE

Thomas Cekoric, Jr., Hopatcong, and Patrick Michael Yananton, Garfield, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed May 25, 1972, Ser. No. 256,984
Int. Cl. C12k *1/10*
U.S. Cl. 195—139 **6 Claims**



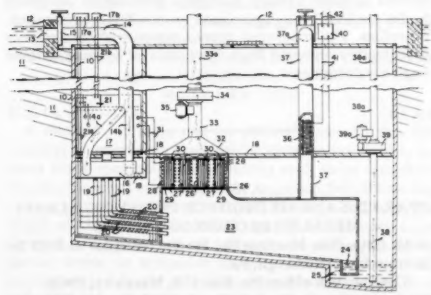
Compartmented tube containing pre- prepared culture media for the differential identification of microorganisms, particularly, organisms of the family *Enterobacteriaceae*. The improvement comprises inserting a rigid member into the device after innoculation is effected, said rigid member being preferentially provided by severing a scored innoculation wire rod which extends through the tube. It further comprises the use of a material to overlay the media which biochemically reacts under anaerobic conditions.

3,784,449

APPARATUS AND METHOD FOR GENERATING ELECTRICITY

George E. Merrill, 266 Sposito Cir., San Jose, Calif.

Filed Mar. 15, 1971, Ser. No. 124,002
Int. Cl. B01d *3/00*
U.S. Cl. 202—180 **3 Claims**



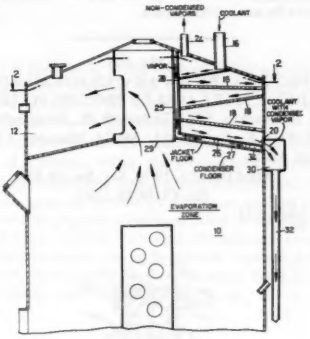
A turbine driven high frequency generator located in a chamber at the bottom of a deep hole in the earth or on the ocean floor thereby providing a natural head with respect to the turbine that is great enough to drive the generator which has a generating capacity sufficient to vaporize a substantial part of the water supplied to furnaces from the turbine. The steam produced in the furnaces is piped upward to a condenser, located at or near the surface, in which it is condensed into potable water and the water supplied to the turbine passes through the condenser to be preheated before dropping through said head to the turbine.

3,784,450

EVAPORATORS WITH MIXING CONDENSERS

Anthonie Van Hengel, Westville, South Africa, assignor to Hulett's Sugar Corporation Limited

Filed May 17, 1971, Ser. No. 144,183
Claims priority, application South Africa, May 18, 1970, 70/3313
Int. Cl. B01d *3/00*
U.S. Cl. 202—185 **5 Claims**



A condenser zone is located inside an evaporator above an evaporation zone, the condenser zone having an inlet for coolant and an outlet for condensate, the condenser zone being insulated on those surfaces that are cooled to prevent condensed vapours falling back into the evaporation zone.

3,784,451

METHOD OF FABRICATING A COMPOSITE MOLD HAVING A RESIN-IMPREGNATED METAL MOLDING SURFACE

Paul Johnson Garner, Thorp Bay, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 886,782, Dec. 19, 1969, abandoned. This application Apr. 24, 1972, Ser. No. 246,924
Claims priority, application Great Britain, June 23, 1969, 31606/69
Int. Cl. C73b *5/60*
U.S. Cl. 204—20 **11 Claims**

Producing a mould, particularly a prototype mould by spraying a metal shell on to model, impregnating the metal shell with a curable resin so that it is no longer porous, electroplating the shell to form a moulding surface and backing the shell to produce a mould.

3,784,452

METHOD OF TREATING THE SURFACE OF SUPERCONDUCTING NIOBIUM CAVITY RESONATORS

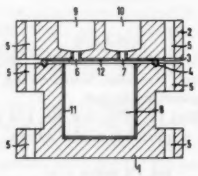
Hans Martens; Heinrich Diepers; Alfred Muller, and Rai-Ko Sun, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Feb. 10, 1972, Ser. No. 225,110

Claims priority, application Germany, Feb. 12, 1971, 2106628

Int. Cl. C23b 5/56, 5/50

U.S. Cl. 204—26 8 Claims



A process for improving the surface quality of superconducting niobium cavity resonators. The process comprises at least partially providing the resonator cavity with a niobium oxide layer by anocid oxidation.

3,784,453

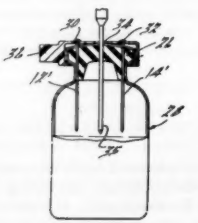
PROCESS AND APPARATUS FOR MAKING RADIOACTIVE LABELED PROTEIN MATERIAL

Howard J. Dworkin, 5581 Tadworth Pl., Birmingham, Mich., and Robert F. Gutkowski, 36824 Manning Ct., Sterling Heights, Mich.

Filed Dec. 16, 1970, Ser. No. 98,574

Int. Cl. B01k 1/00

U.S. Cl. 204—131 14 Claims



A closed sterile electrolytic system for tagging human serum albumin and other compounds and/or substances including proteins with a radioactive isotope, such as the 99m isotope of technetium, producing a radioactive tracer material which is suitable for biological studies and medical uses.

3,784,454

ADDITIVE FOR THE ELECTRODEPOSITION OF COPPER

Derek Martin Lyde, Stourbridge, England, assignor to Albreght & Wilson Limited, Oldbury, near Birmingham, Warwickshire, England

Division of Ser. No. 63,954, Aug. 14, 1970, Pat. No. 3,674,660, which is a continuation-in-part of Ser. No. 724,225, April 25, 1968, abandoned. This application Dec. 16, 1971, Ser. No. 209,004

Claims priority, application Great Britain, May 1, 1967, 19989/67

Int. Cl. C23b 5/46

U.S. Cl. 204—52 R 14 Claims

Brightener compositions for aqueous copper pyrophosphate electroplating electrolyte consisting essentially of (1) a heterocyclic brightening additive selected from the group consisting of mercaptothiazoles, mercaptobenzthiazoles, mercaptothiadiazoles, mercaptopyrimidines, and mercaptoiminazoles, and (2) an auxiliary brightener selected from the group of step plating inhibitors consisting of imino diacetic acid, malonic acid, cinammic acid, aurine tricarboxylic acid, aliphatic dicarboxylic acids having at least seven carbon atoms, salts of the aforesaid acids and hydroxyethyl cellulose, said auxiliary brightener being in a proportion of from 3:1 to 3:4 based on the weight of said heterocyclic brightener.

3,784,455

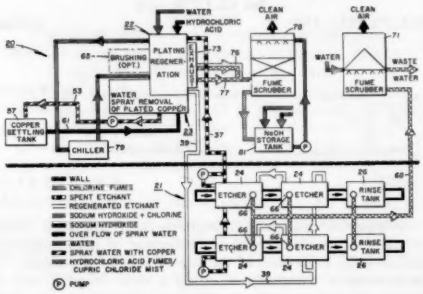
METHODS OF ELECTROLYTIC REGENERATIVE ETCHING AND METAL RECOVERY

Girish D. Parikh, Columbus, and William C. Willard, Reynoldsburg, both of Ohio, assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 28, 1971, Ser. No. 212,911

Int. Cl. B01k 1/00, 3/00

U.S. Cl. 204—130 13 Claims



Methods and apparatus are disclosed for electrolytically recovering metal from an electrolyte and/or an etchant on specially constructed and configured cathodes. The metal deposits advantageously may be subsequently removed from the cathodes with no mechanical or chemical cathodic stripping operation being required. In a more specific application, the invention relates to a continuous cupric chloride-hydrochloric acid etching system for use in recovering etched copper from articles, such as printed circuit boards, wherein the spent etchant is continuously, or intermittently, electrolytically regenerated and etched copper simultaneously recovered as loose, spongy, fine grain deposits on elongated cathodes preferably having arcuate or curvilinear plating surface profiles. The recovered copper deposits advantageously may be readily removed from the cathodes by passing them through a water spray.

3,784,456

APPARATUS AND METHOD FOR PURIFYING ALKALI METAL HYDROXIDE SOLUTIONS

Jack M. Otto, New Martinsville, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.

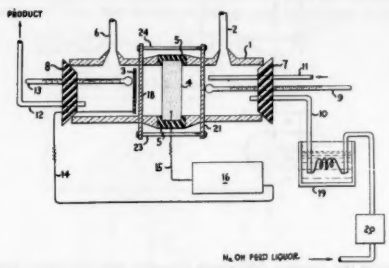
Continuation of Ser. No. 806,173, March 11, 1969, abandoned. This application Mar. 2, 1972, Ser. No. 231,271

Int. Cl. B01k 3/00, 3/04; C01d 1/40

U.S. Cl. 204—153 3 Claims

Aqueous alkali metal hydroxide solutions are purified by

passage through a porous cathode of an electrolytic cell having an anode located downstream of the cathode. An electrolytic cell of special construction particularly useful is described.



3,784,457

PROCESS FOR REMOVING ELECTROLYTES FROM AQUEOUS SOLUTION

Yukio Mizutani; Toshikatsu Sata, both of Tokuyama; Ryuji Izuo, Kudamatsu, all of Japan, and Reiichi Yamane, deceased, late of Tokuyama, Japan (by Masako Yamane, heir), assignors to Tokuyama Soda Kabushiki Kaisha, Tokuyama-shi, Yamaguchi-ken, Japan

Filed Sept. 13, 1971, Ser. No. 179,992

Claims priority, application Japan, Sept. 14, 1970, 45-79992/70

Int. Cl. B01d *13/02*

U.S. Cl. 204—180 P **4 Claims**

A process for removing electrolytic substances from water which comprises electrodialyzing an aqueous solution containing electrolytic substances using an ion-exchange membrane to remove the electrolytic substances from the aqueous solution, such exchange membrance consisting of an insoluble, infusible synthetic organic polymer having dissociable ionic groups chemically bonded thereto and having pores through which ions can pass the membrane, at least one substantial surface of the ion-exchange membrane intimately retaining an electrolytic substance having an opposite electric charge to the charge of the ion-exchange group of the ion-exchange membrane and being incapable of passing through the pores of the ion-exchange membrane.

3,784,458

METHOD OF COATING A CONTINUOUS STRIP OF RIBBON RAZOR BLADE MATERIAL

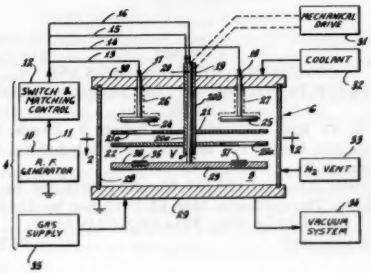
George C. Lane, Danbury, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 144,510, May 18, 1971. This application Apr. 3, 1973, Ser. No. 347,732

Int. Cl. C23c *15/00*

U.S. Cl. 204—192 **6 Claims**

A method and apparatus for placing extremely thin finish coatings on previously sharpened coils of band or ribbon type razor blade material prior to cutting such strips into shorter lengths for eventual inclusion in magazine fed ribbon blade safety razors. The method includes winding a relatively great length of ribbon blade into a helix or coil with an open center, fitting the coil within a special fixture, and placing the coil and fixture within an evacuable chamber wherein one or more coating materials are sputtered onto the blade edge in extremely thin layers under carefully controlled conditions. The chamber, in addition to conventional vacuum system components, includes at least one, and sometimes plural electrodes, each adapted to receive thereover a target plate containing a coating of the material to be sputtered therefrom and onto the blade edge. A shutter arrangement is provided to shield the blade edge against contamination during the time the target is being cleaned in vacuo prior to coating, and to protect the target from contamination when the blade edge is being sputter etched in order to clean it before coating. Means are provided for indexing the shutter to desired positions for these operations and for rotating the fixture so as to cause portions of the blade coil to be passed successively adjacent the target in facing relation thereto when the shutter is indexed so as to provide a generally perpendicular line of sight between the target and the portion of the blade coil facing the target.



The fixture is preferably in the form of a disc with an annular groove therein for receiving the blade coil and for providing controlled exposure of the edge portion thereof, while the shutter preferably is in the form of one or more rotatably mounted apertured plates. The sputtering process includes the formation of a plasma within the evacuated chamber by the ionization of an otherwise inert or non-reactive gas; the coating materials may be metals or alloys as well as dielectric materials such as organic plastics applied to the edge for imparting lubricity thereto. Coating thicknesses range from about 50 Angstroms or less up to several hundred Angstroms or more, but, in any case, are insufficiently thick to dull the previously sharpened blade edge.

3,784,459

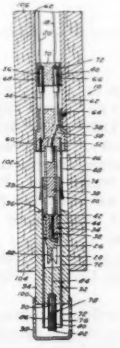
DEVICE FOR DETERMINING THE ACTIVITY OF OXYGEN IN MOLTEN METAL

Paul L. Jackson, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 12, 1972, Ser. No. 261,896

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 S **9 Claims**



A device for determining the activity of oxygen in molten metal is disclosed. The device has a reusable portion which is

used during each oxygen determination. The device also has an expendable portion which is consumed in the molten metal during each oxygen determination. A feature of the device is that no fine wires are utilized in connecting the expendable portion to the reusable portion. In the expendable portion of the device, a half cell comprising a solid electrolyte and an oxygen reference material is protected from thermal and mechanical shock upon its immersion into the molten metal. Another feature of the device is that the expendable portion can be easily attached to the reusable portion.

3,784,460

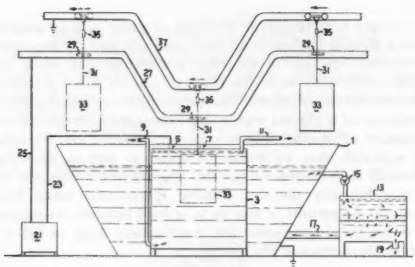
COMBINED ELECTRODIALYSIS AND ULTRAFILTRATION OF AN ELECTRODEPOSITION BATH

Louis R. Le Bras, Gibsonia, and Robert R. Zwack, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 123,299, March 11, 1971, Pat. No. 3,663,406. This application Mar. 13, 1972, Ser. No. 234,007

Int. Cl. B01d *13/02*; **B01k** *5/02*; **C23b** *13/00*

U.S. Cl. 204—301 **4 Claims**



A method of controlling undesirable components in an electrodeposition bath comprising a film-forming vehicle resin in an aqueous medium, by subjecting at least a portion of the electrodepositable composition, simultaneously or at a separate time, to an electrodialysis process in conjunction with a selective separation process whereby process parameters and the properties of the deposited film are maintained.

3,784,461

DEVICE FOR CONTROLLING THE PROCESS OF DESALTING AND DEHYDRATION OF OIL IN AN ELECTRIC DEHYDRATOR

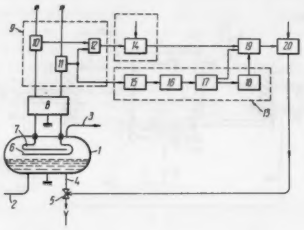
Boris Isaakovich Kusovsky, Trolleibusny pereulok, 21, kv. 32; Nikolai Ivanovich Pavlov, Oktyabrskaya ulitsa, 39, kv. 30; Anatoly Petrovich Matiichenko, Pervomaisky prospekt, 29/2, kv. 20; Sergei Alexandrovich Zakharov, Pervomaisky prospekt, 32, kv. 15, and Anatoly Fedorovich Kirilin, 3 Linia, 2, all of Ryazan, U.S.S.R.

Filed June 1, 1972, Ser. No. 258,582

Int. Cl. B01d *13/02*

U.S. Cl. 204—306 **1 Claim**

A device for controlling the process of desalting and dehydration of oil in an electric dehydrator having two electrodes comprising a current difference detector responding to the currents in the circuits of said electrodes and being connected to an error detector comparing the real value of the currents in the electrode circuits with a specified value, the output of said error detector being connected to the actuating mechanism of a valve controlling the discharge of the salt water and mud sludge from the electric dehydrator; inserted



between the current difference detector and the error detector is a unit shaping a signal corresponding to the real value of the currents in the circuits of the electrodes.

3,784,462

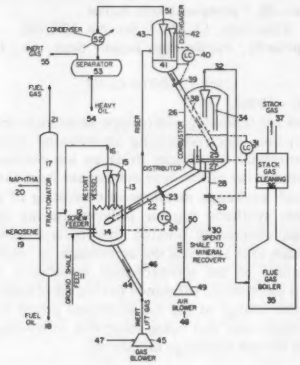
PROCESS AND APPARATUS FOR OIL SHALE RETORTING

George W. Frick, Mercerville, N.J., assignor to Cities Service Research & Development Company, Cranbury, N.J.

Filed Feb. 25, 1971, Ser. No. 118,795

Int. Cl. C10g *1/02*

U.S. Cl. 208—11 **10 Claims**



A process and apparatus are disclosed for the continuous steady state retorting of ground oil shale in the absence of air. Retorting is accomplished by countercurrently contacting heated spent oil shale with fresh ground oil shale in a vessel from which air is excluded. The spent oil shale is heated by combustion of its carbonaceous residue to form a hot heat transfer medium which, when contacted with fresh oil shale in the retorting process, provides the energy for the recovery of hydrocarbons.

3,784,463

CATALYTIC CRACKING OF NAPHTHA AND GAS OIL

David L. Reynolds, Nederland; Douglas J. Youngblood, Groves; Dorrance P. Bunn, Jr., Houston, and Roy E. Pratt, Groves, all of Tex., assignors to Texaco Inc., New York, N.Y.

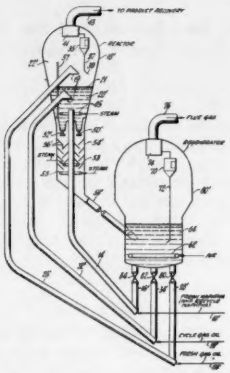
Filed Oct. 2, 1970, Ser. No. 77,479

Int. Cl. C10g *11/18, 37/02*; **B01j** *9/20*

U.S. Cl. 208—74 **29 Claims**

Low octane naphtha and fresh gas oil are catalytically cracked with a zeolite catalytic cracking catalyst in separate elongated reaction zones yielding a naphtha having an in-

creased octane rating. Recovering a naphtha fraction, particularly a heavy naphtha fraction, from the cracked product, and combining it with the fresh naphtha feed, further enhances the octane rating of the naphtha product. A cycle gas oil may be recovered from the reactor effluent and combined with the



fresh naphtha feed or introduced into a separate (a third) elongated reaction zone to effect maximum recovery of naphtha and lighter stocks having improved product quality. Optionally, any of the feedstocks may be subjected to further cracking in a dense bed of the zeolite catalyst.

3,784,464

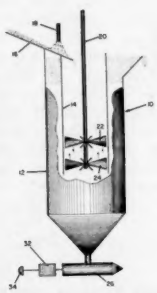
PROCESS FOR WASHING SECONDARY SEPARATOR FROTH TO RECOVER BITUMEN

Victor Paul Kaminsky, Edmonton, Alberta, Canada, assignor to Canada Cities Service Ltd.; Imperial Oil Ltd.; Atlantic Richfield Canada, Ltd. and Gulf Oil Canada, Ltd., part interest to each

Filed Dec. 23, 1971, Ser. No. 211,549

Int. Cl. C10g *1/00*

U.S. Cl. 208—11 **1 Claim**



Disclosed herein is a process for the separation of bitumen from Athabasca tar sands in which a secondary-separator froth stream is produced consisting primarily of bitumen entrained in tailings waters. The process comprises mixing the secondary-separator froth with fresh hot water and feeding the mixture downwardly through the inner zone formed by the draft tube, while preventing the mixture from rotating and forming a vortex, engaging the mixture in the tube by a down-throw impeller and then engaging the mixture in the tube by an up-throw impeller, to aid in the separation of the bitumen from the solids in the froth, passing the mixture into a lower quiescent settling zone, floating the bitumen to the surface of the liquid in the annulus formed by the draft tube, removing the floating bitumen from above the liquid level, removing the solids and water from the settling zone.

3,784,465

TREATMENT OF GASES AND LIQUIDS

Thomas Nicklin, Middleton, and Frederick Farrington, Sale, both of England, assignors to The Gas Council, London, England

Division of Ser. No. 843,832, July 22, 1969, Pat. No. 3,714,328. This application July 27, 1972, Ser. No. 275,697

Int. Cl. C10g *27/00, 23/02*

U.S. Cl. 208—208 R **10 Claims**

Gases or liquids are steam desulphided in the presence of a catalyst containing a uranium oxide together with a thorium oxide and/or a cobalt oxide. Air may also be present. The process is useful for desulphiding inorganic gases, for example effluent gases and for desulphiding organic compounds such as oils.

3,784,466

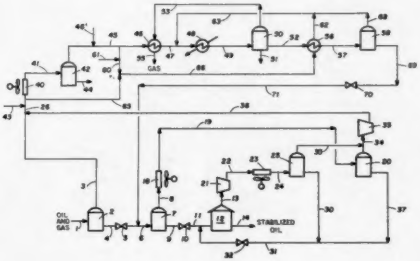
OIL AND GAS TREATMENT

Thomas B. Arnold; Eugene B. Byrnes, both of Dallas, and Alonzo R. Castoe, Irving, all of Tex., assignors to Atlantic Richfield Company, New York, N.Y.

Division of Ser. No. 100,905, Dec. 23, 1970, Pat. No. 3,702,296. This application July 28, 1972, Ser. No. 276,143

Int. Cl. C10g *7/00*

U.S. Cl. 208—361 **8 Claims**



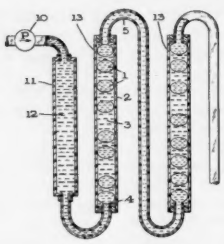
Methods for treating oil and gas to stabilize the oil by removing the gas and to make the gas meet specifications such as dew point. The oil is stabilized by subjecting same to flash conditions and the extent of flashing is controlled by adding to the oil a more volatilizeable material of varying liquid and gas content. The gas is prepared to meet specifications by cooling followed by contacting with at least one solvent which has a greater affinity for heavier hydrocarbons, carbon dioxide, hydrogen sulfide, and water than for methane, ethane, and propane.

3,784,467

DROPLET COUNTERCURRENT CHROMATOGRAPHY

Takenori Tanimura, Tokyo, Japan, and Yoichiro Ito, Chevy Chase, Md., assignors to the United States of America as represented by the Secretary of the Department of Health, Education, and Welfare

Filed May 26, 1971, Ser. No. 147,133
Int. Cl. B01d 15/08
U.S. Cl. 210—31 C 7 Claims



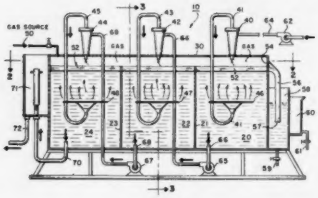
A droplet countercurrent chromatographic all-liquid separation technique for partitioning a solute between a steady stream of droplets of moving phase and a column of surrounding stationary liquid phase. Milligram quantities of biochemicals may be separated using this process.

3,784,468

SYSTEM AND METHOD FOR SEPARATING HEAVIER AND LIGHTER COMPONENTS OF LIQUID MIXTURES

Juan A. Garcia, Houston, Tex., assignor to Esso Production Research Company

Filed Sept. 20, 1971, Ser. No. 181,989
Int. Cl. B01d 17/02
U.S. Cl. 210—44 14 Claims



A mixture of liquids capable of gravity separation, such as oil and water, is charged with gas or aerated in a cyclone. The aerated liquid mixture is then separated in a flotation chamber or cell. The lighter liquid component floats to the surface of the liquid mixture in the flotation cell aided by the rising gas in the liquid mixture. Several cyclone-flotation cells may be connected together in series in which arrangement the heavier separated component mixed with the lighter unseparated component is cycled from a particular flotation cell to the next succeeding cyclone-flotation cell.

3,784,469

PROCESS OF PREVENTING SCALE AND DEPOSIT FORMATION IN AQUEOUS SYSTEMS

Friedrich Krueger, Edingen, and Lieselotte Bauer, Bad Duerkheim, Germany, assignors to Joh. A. Benckiser GmbH, Chemische Fabrik, Ludwigshafen (Rhine), Germany

No Drawing. Filed June 16, 1972, Ser. No. 263,610
Claims priority, application Germany, July 1, 1971, P 21 32 802.9
Int. Cl. C02b 5/06
U.S. Cl. 210—58 15 Claims

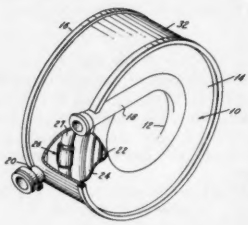
Scale and deposit formation in aqueous systems is prevented or suppressed by the addition thereto of cyclohexane-1,2,3,4,5-pentacarboxylic acid preferably in substoichiometric amounts calculated for the scale and hardness causing compounds present in such aqueous systems. A synergistic effect is achieved by the admixture of substoichiometric amounts of amino alkylene phosphonic acids or alkane phosphonic acids.

3,784,470

COMPOSITE COILED MEMBRANE ASSEMBLY

John Lloyd Richardson and Gilbert Segovia, Santa Ana, Fred Ju, Huntington Beach, and Wilfred Hugo Bachle, Long Beach, Calif., assignors to Philco-Ford Corporation, Blue Bell, Pa.

Filed Nov. 20, 1972, Ser. No. 308,120
Int. Cl. B01d 31/00
U.S. Cl. 210—321 5 Claims



Separate lengths of semipermeable membrane suitable for reverse osmosis and ultrafiltration are connected to each other by a short, strong connector assembly. The resulting assembly is wound onto a spool shaped housing in a helical multi-layered coil. A compressible or elastomeric pad separates the inner diameter of the coil from the hub of the housing to absorb dimensional changes caused by pressurization of the membrane during its operation in a reverse osmosis system. The connector assembly preferably includes soft elastomeric extensions on each end of an inner member which fits inside the connected ends of the membrane to dissipate stress concentrations.

3,784,471

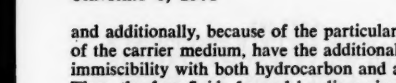
SOLID ADDITIVES DISPERSED IN PERFLUORINATED LIQUIDS WITH PERFLUOROALKYL ETHER DISPERSANTS

Robert Kaiser, Cambridge, Mass., assignor to Avco Corporation, Cincinnati, Ohio

No Drawing. Filed May 11, 1970, Ser. No. 36,429
Int. Cl. C10m 3/02, 3/06, 3/24
U.S. Cl. 252—21 11 Claims

Stable dispersions of a wide variety of solids, e.g. magnetite, silica, carbon black, graphite, and the like, are provided in perfluorinated liquids. The colloids provided by the present invention can be utilized in the same fashion as hydrocarbon based colloidal dispersions,

and additionally, because of the particular characteristics of the carrier medium, have the additional advantages of immiscibility with both hydrocarbon and aqueous media. Thus, the ferrofluids formed by dispersing magnetic particles in accordance with the present invention are particularly useful as seal fluids. They can be positioned in space by a magnetic field. The stable dispersions are formed by dispersing finely divided solids of up to about one micron in the presence of a perfluorinated liquid, such as Freon E or Krytox oil and a surfactant having the following:



where n is an integer of from 3 to 50.

3,784,472
ANTI-CORROSION LUBRICATING COMPOUND
Stanley J. Caplan, Northridge, Calif., assignor to Accralube Company, Northridge, Calif.
No Drawing. Filed Oct. 26, 1971, Ser. No. 192,576
The portion of the term of the patent subsequent to Feb. 22, 1989, has been disclaimed
Int. Cl. C10m *5/14*
U.S. Cl. 252—25 **10 Claims**

An improved heavy duty coating composition for protection against corrosion of metallic substrates and for lubrication of metallic parts comprises a substantially uniform mixture of at least about 40 weight percent of a selected lead compound in particulate form and an essentially homogeneous grease-containing vehicle. The vehicle comprises a major proportion of grease, preferably heavy duty grease, and a minor proportion of lubricating oil, preferably high pressure lubricating oil. The grease-containing vehicle is non-separating and preferably the grease is present in the vehicle in a weight ratio to the oil of about 3:1. The lead compound is selected from the group consisting of lead carbonate, lead subcarbonate and mixtures thereof.

3,784,473
LUBRICATING OIL COMPOSITIONS
Alphonso W. Marcellis, Boonton, and Paul M. Kerschner, Trenton, N.J., assignors to Cities Service Oil Company, Cranbury, N.J.
No Drawing. Filed Apr. 26, 1971, Ser. No. 137,668
Int. Cl. C10m *1/36*
U.S. Cl. 252—51.5 A **4 Claims**

An additive having detergency properties for incorporation in lubricating oils and lubricating oil compositions containing sad additve. The addtive s the condensation product of an aliphatic polyamine and a mixture of a monocarboxylic acid and a polyhalo aliphatic acid having a terminal —CF_3 group in which at least 50% of the amino groups of the polyamine are converted to amide groups by condensation with the mixture of acids. The preferred lubricating oil composition is a 2-cycle engine oil comprising a major proportion of a hydrocarbon lubricating oil and a minor proportion of the additive of this invention.

3,784,474
LUBRICATING OIL COMPOSITION
Stuart Houston Brown, San Rafael, and Warren Lowe, El Cerrito, Calif., assignors to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed Mar. 13, 1972, Ser. No. 234,398
Int. Cl. C10m *1/32*
U.S. Cl. 252—51.5 R **9 Claims**

A lubricating oil composition containing a hydrocarbyl substituted amine ashless detergent where the hydrocarbyl substituent contains at least 40 carbon atoms, a polyoxyalkylene derivative, and an alkaline earth metal carbonate dispersed in the oil to provide an alkalinity value of about 10 mg. KOH/g. These compositions are found to be highly rust and corrosion inhibitory while also possessing the ability to reduce or prevent the formation of varnish, sludge and deposits on the inner metallic surfaces of internal combustion engines. The preferred polyoxyalkylene derivatives are the polyoxyalkyene polyols or oxaalkanols.

3,784,475
DETERGENT COMPOSITIONS CONTAINING OXIDIZED POLYSACCHARIDE BUILDERS
Francis L. Diehl, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Continuation of abandoned application Ser. No. 802,255, Feb. 25, 1969. This application Nov. 17, 1971, Ser. No. 199,812
Int. Cl. C11d *3/02*
U.S. Cl. 252—89 **6 Claims**

Detergent and laundering compositions comprising an organic water-soluble synthetic detergent and a water-soluble oxidized polysaccharide builder in a proportion by weight of detergent to builder of 10:1 to about 1:20; the builder having a degree of carboxylation of 1.0 to 3.0, an equivalent weight of 68 to 200, a degree of polymerization, n, of 20 to 30,000 and a molecular weight of 4,000 to 5,000,000.

3,784,476
DETERGENT COMPOSITION
Daniel Marten van Kampen, Vlaardingen, and Jacobus Hendricus Marinus Weenen, Brielle, Netherlands, assignors to Lever Brothers Company, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 161,970, July 12, 1971, which is a continuation of application Ser. No. 767,511, Oct. 14, 1968, both now abandoned. This application Dec. 17, 1971, Ser. No. 209,460
Claims priority, application Luxembourg, Oct. 16, 1967, 54,673
Int. Cl. C11d *7/42*
U.S. Cl. 252—109 **4 Claims**

A particulate enzyme-containing detergent composition contains a detergent surface-active agent, a water-soluble builder salt and discrete, shaped inorganic solids containing proteolytic or amylolytic enzymes.

3,784,477
PAINT REMOVAL COMPOSITIONS
Raymond G. Esposito, R.F.D. 2, Union, Maine 04862
No Drawing. Continuation-in-part of application Ser. No. 5,944, Jan. 26, 1970, which is a continuation-in-part of application Ser. No. 670,428, Sept. 25, 1967, both now abandoned. This application Aug. 13, 1971, Ser. No. 171,760
Int. Cl. C09d *9/00*
U.S. Cl. 252—162 **11 Claims**

Paint and other finishes can be readily and safely removed from even the most delicate pieces of furniture by using a mixture of (1) xylol or aromatic naphthas with (b) at least 5 parts per hundred of either dimethylformamide, dimethylacetamide, or mixtures thereof. A preferred mixture is that of approximately 20% dimethylformamide with approximately 80% of xylol to form an azeotropic mixture. The object is immersed or sprayed in a tank with the mixture which is allowed to remain on the surface until it is softened. Then the swollen finish is removed by washing with fresh mixture and air-dried.

3,784,478
CONTROL OF NITROGEN OXIDES FROM COMBUSTION PROCESS EFFLUENTS
Elmar R. Altwicker, Elnora, and Richard E. Gibbs and Nicholas P. Kolak, Troy, N.Y., assignors to Argo Research International, Ltd., New York, N.Y.
Filed Sept. 7, 1971, Ser. No. 178,305
Int. Cl. B01d *47/02*; C09k *3/00*
U.S. Cl. 252—192 **6 Claims**

A process for the removal of nitrogen containing compounds from a gas containing a mixture of the same com-

prising contacting the gas with a composition comprising an electron donor compound, water, and an alkali compound.

3,784,479
FOAM CONTROL COMPOSITION
Joseph W. Keil, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
No Drawing. Filed May 15, 1972, Ser. No. 253,617
Int. Cl. B01d *17/00*
U.S. Cl. 252—358 **8 Claims**

A composition for controlling foam is disclosed which comprises a base oil of polyoxypropylene polymers, polyoxypropylene - polyoxyethylene copolymers or siloxane glycol copolymers, a foam control agent comprising a liquid polydimethylsiloxane, 88–95 parts by weight, and 0.1–10 percent by weight of a siloxane copolymer dispersing agent. Silica may also be present.

3,784,480
CEDAR POLYPHENOLS AND THIODIPROPIONIC ACID AS ANTIOXIDANTS FOR USE IN ANIMAL FATS AND VEGETABLE OILS
Arthur Karchmar, Clifton, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
No Drawing. Application Feb. 2, 1970, Ser. No. 8,054, now Patent No. 3,628,971, which is a continuation-in-part of application Ser. No. 690,755, Dec. 15, 1967, now Patent No. 3,573,936. Divided and this application Nov. 1, 1971, Ser. No. 194,602
Int. Cl. A23d *5/04;* **C11b** *5/00*
U.S. Cl. 252—404 **7 Claims**

Mixtures of cedar polyphenols and thiodipropionic acid exhibit synergistic antioxidant effects when added to animal fats and vegetable oils and foodstuffs containing these materials. The amount of the polyphenol component of the mixture should be at least equal to the amount of thiodipropionic acid therein. These cedar polyphenol-thiodipropionic acid additives greatly increase the storage life of fats and oils when added thereto in amounts of at least about 50 parts per million.

3,784,481
HYDROGENATION CATALYSTS CONTAINING A TRANSITION METAL SALT AND AN ALUMINUM HYDRIDE COMPOUND
Christian Lassau, Paris, Robert Stern, Marly-le-Roi, and Lucien Sajus, Croissy-sur-Seine, France, assignors to Institut Francais du Petrole, Des Carburants et Lubrifiants, Rueil-Malmaison, France
No Drawing. Continuation-in-part of application Ser. No. 856,251, Sept. 5, 1969, now Patent No. 3,663,635. This application Apr. 5, 1971, Ser. No. 131,495
Claims priority, application France, Apr. 6, 1970, 7012441; Dec. 23, 1970, 7046582
Int. Cl. C07c *5/02*
U.S. Cl. 252—431 C **12 Claims**

In a process of hydrogenating an unsaturated organic compound capable of being reduced, e.g., olefins, in the presence of Ziegler-type catalysts, substantial advantages are obtained by using as the organo metallic reducing agent an aluminum hydride of the formula:

$$AlH_nX_{3-n} \text{ or } Me(AlH_mX'_{4-m})_p$$

wherein

n is 1 or 2,
m is 1,2, or 3,
Me is a metal of Group I*a* or II*a* of the Periodic Table,
p is the valence of the metal Me,
X is OR, NR_2, NHR or SR,
X′ is R, OR, NR_2, NHR or SR,
R, taken separately, is a monovalent hydrocarbon, and when taken in pairs represents —A—Z—B— wherein A and B each is alkylene, and Z is alkylene, an oxygen or sulfur atom, a NH or N-hydrocarbyl group or a polyvalent metal.

3,784,482
HYDROCARBON SOLUBLE PHOSPHORUS-MODIFIED MOLYBDENUM CATALYSTS
Stanley Bruce Cavitt, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.
No Drawing. Filed Dec. 28, 1970, Ser. No. 102,138
Int. Cl. C07d *1/08*
U.S. Cl. 252—431 P **8 Claims**

Stable, homogeneous phosphorus-modified molybdenum catalysts are prepared by incorporating phosphorus ligands into molybdenum compounds. The molybdenum compounds are prepared by reacting an ammonia-containing molybdate with a hydroxy compound, for example, an organic primary or secondary alcohol, a glycol or a phenol. The hydrocarbon-soluble phosphorus-modified molybdenum solutions are useful as homogeneous oxidation catalysts, particularly for the oxidation of olefins to olefin oxides. Olefin oxides are useful in the manufacture of non-toxic antifreeze, urethane-grade polyols and many other applications. The catalysts of the invention may also be used as metal-plating solutions, lubricant additives, pigments, ammoxidation catalysts, printing inks, or solution components for organic laser devices. They may also be used as catalysts or co-catalysts for various polymerization processes, such as homopolymerization of isocyanates, isocyanate-polyol reactions, or olefin oxide polymerization reactions.

3,784,483
COBALT, IRON, PHOSPHORUS AND OXYGEN CONTAINING OXIDATIVE DEHYDROGENATION CATALYST
Robert S. Cichowski, Arroyo Grande, Calif., assignor to Phillips Petroleum Company
No Drawing. Filed May 6, 1971, Ser. No. 140,969
Int. Cl. B01j *11/82*
U.S. Cl. 252—437 **4 Claims**

Organic compounds are dehydrogenated to compounds having a higher degree of unsaturation by contacting the feedstock in the vapor phase in the presence of an oxygen-containing gas with a catalyst comprising cobalt in association with iron, phosphorus and oxygen. Representative of such conversions is the oxidative dehydrogenation of isopentane to isoprene and isoamylenes. The conversion products are valuable compounds particularly useful as intermediates for the preparation of polymeric materials such as synthetic rubbers and the like.

3,784,484
ACTIVITY AND STRENGTH PROPERTIES OF REFORMING CATALYSTS BY ALUMINUM CHLORIDE LEACHING
William B. Innes, Upland, Calif., Malden W. Michael, Norwalk, Conn., and Stephen F. Adler, Santa Claus, Ind., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Continuation-in-part of abandoned application Ser. No. 444, Jan. 2, 1970. This application Mar. 8, 1972, Ser. No. 232,932
Int. Cl. B01j *11/12*
U.S. Cl. 252—442 **4 Claims**

This invention relates to platinum-alumina reforming catalysts and particularly to a process for manufacturing such catalysts which includes the step of leaching alumina with aluminum chloride.

3,784,485
OXIDATIVE DEHYDROGENATION CATALYST
Edward S. J. Tomezsko, Media, Pa., assignor to Atlantic Richfield Company, New York, N.Y.
No Drawing. Original application Mar. 16, 1971, Ser. No. 124,979, now Patent No. 3,697,614. Divided and this application Apr. 17, 1972, Ser. No. 244,995
Int. Cl. B01j *11/06, 11/22*
U.S. Cl. 252—467 **5 Claims**

Method for the oxidative dehydrogenation of paraffins to produce olefins by contacting the paraffins with mo-

lecular oxygen in the presence of molten alkali metal hydroxides, aluminum, and a soluble transition metal oxyanion included in the molten alkali metal hydroxide.

3,784,486

α,α-CARBOXYALKOXY SUCCINIC ACID COMPOUNDS AS DETERGENT BUILDERS AND SEQUESTERING AGENTS

Gunner E. Nelson and Tillmon H. Pearson, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

No Drawing. Filed June 16, 1971, Ser. No. 153,816
Int. Cl. C02b *5/06;* **C11d** *3/20*
U.S. Cl. 252—546 **10 Claims**

To obviate eutrophication of water, non-phosphorus detergent builders and sequestering agents are provided. These are either

(a) α,α′-carboxyalkoxy succinic acids wherein the carboxyalkoxy radicals contain from 2 to about 7 carbon atoms,

(b) water soluble salts of such acids

or mixtures of (a) and (b). Conventional detergent actives may be used with these builders.

3,784,487

PROCESS FOR MAKING A FOAM FROM A COMPOSITION COMPRISING BITUMINOUS MASSES, A NOVOLAC, AND HEXAMETHYLENETETRAMINE

Heinz-Gerhard Franck and Walter Metzendorf, Duisburg-Meiderich, and Erich Schweym, Herbert Beneke, Rolf Marrett, Jozef Nijssen, and Jaafar Omran, Castrop-Rauxel, Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Germany

No Drawing. Continuation of abandoned application Ser. No. 885,308, Dec. 15, 1969. This application Apr. 5, 1972, Ser. No. 241,397
Int. Cl. C08j *1/14*
U.S. Cl. 260—2.5 F **28 Claims**

Foam materials of cellular structure are prepared from mixtures of bituminous materials with novolak by expanding and hardening said mixtures in molten condition by crosslinking and propelling. The molten mixture is preferably expanded and hardened by the incorporation therein of hexamethylenetetramine which acts as a crosslinking as well as hardening and propelling agent. The resulting inexpensive materials of cellular structure have satisfactory isolating characteristics, good mechanical resistivity, high resistance to temperature changes, considerable chemical stability and are not inflammable.

The foaming and hardening process according to the invention can be favorably influenced by subjecting the molten mixture of bituminous materials and novolak to a short pretreatment consisting of adding thereto a small amount of hexamethylenetetramine at about 150°–160° C.

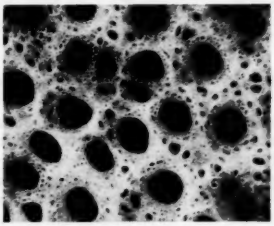
3,784,488

PROCESS AND COMPOSITIONS FOR PREPARING UNIQUE FILMS HAVING A MULTIPLICITY OF VOIDS AND AN ORGANIC MATERIAL CONTAINED THEREIN

Alfred F. Steinhauer and Otis R. McIntire, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of abandoned application Ser. No. 799,873, Feb. 17, 1969. This application Feb. 14, 1972, Ser. No. 225,994
Int. Cl. C08j *1/14*
U.S. Cl. 260—2.5 M **22 Claims**

Novel film forming solution compositions which contain a high level of a non-volatile liquid organic compound in proportion to the film forming polymer are capable of forming unique coherent films having a multiplicity of voids which contain therein the organic compound. Important to obtaining the unique films of the invention is the requirement that the polymer be insoluble



in the organic compound and immiscible therewith and be more soluble in the solvent than the organic compound.

3,784,489

ANION EXCHANGE RESINS FROM ALKYLATED CONDENSATION POLYMERS OF POLYETHYLENEIMINE AND DIHALOALKANES

Mark Dales, 1114 Churchill Road, Southampton, Pa. 18966, and Jong Jai Whang, 294–18 Fee-Kyong Bong, Bong-Dae-Moon-Gu, Seoul 131, South Korea

No Drawing. Filed Mar. 6, 1972, Ser. No. 232,272
Int. Cl. C08g *33/08*
U.S. Cl. 260—2.1 C **13 Claims**

Anion exchange resins are produced by (a) condensing polyethyleneimine with at least one dihaloalkane, followed by (b) reacting the product of (a) with an alkylating agent to convert substantially all of the nontertiary amine groups in (a) to tertiary or quaternary amine groups.

3,784,490

MICROPOROUS VINYL CHLORIDE POLYMERS AND METHOD OF MAKING THE SAME

Norman B. Rainer, Richmond, and Donald A. Full, Lexington, Va., assignors to Philip Morris Incorporated, New York, N.Y.

No Drawing. Filed Sept. 23, 1971, Ser. No. 183,256
Int. Cl. C08f *29/18, 47/08*
U.S. Cl. 260—2.5 M **16 Claims**

This disclosure relates to a novel process and to novel products. The products comprise shaped structures of a vinyl chloride polymer having an improved microreticulated structure and are made by a process involving the formation of a dispersion of vinyl polymer particles in certain organic liquids which are non-solvents for the polymer, reduced pressure deaeration of the dispersion and heating of the deaerated dispersion to sinter the vinyl chloride polymer particles to form a microreticulated microporous structure. The products of this invention are particularly useful as filter materials and the process of the invention is especially suited for the formation of shaped porous articles, useful as filters.

3,784,491

POLYMERIZATION OF VINYL MONOMERS USING COACERVATE STABILIZING AGENTS CONTAINING GELATIN

Roman L. Pozorski, South Holland, Ill., assignor to Wilson & Co., Inc., Oklahoma City, Okla.

No Drawing. Continuation-in-part of abandoned application Ser. No. 792,153, Jan. 17, 1969. This application May 27, 1971, Ser. No. 147,676
Int. Cl. C08f *45/60*
U.S. Cl. 260—8 **10 Claims**

Significant improvements in the process and product are achieved using a dispersion polymerization method

comprising polymerizing a vinyl monomer in an aqueous medium together with a coacervate of a water-soluble positively-charged, proteinaceous colloid and at least one negatively-charged, water-soluble colloid as a stabilizing agent.

3,784,492

N-(5-NORBORNEN-2-YLMETHYL)CARBAMATE OF CELLULOSE ACETATE

Henry Octave Colomb, Jr., and David John Trecker, South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Application Sept. 15, 1970, Ser. No. 72,543, which is a division of application Ser. No. 804,279, Mar. 4, 1969, now Patent No. 3,554,886, which in turn is a continuation-in-part of abandoned application Ser. No. 697,635, Jan. 15, 1968. Divided and this application May 22, 1972, Ser. No. 255,426

Int. Cl. C08g *22/00*

U.S. Cl. 260—13 R **1 Claim**

The N-(5-norbornen-2-ylmethyl)carbamate of cellulose acetate.

3,784,493

AMINOLIGNOSULFONATE-FORMALDEHYDE REACTION PRODUCTS AND PROCESS OF PREPARATION

Jacques Giguere and Jean-Guy Landry, Quebec City, Quebec, Canada, assignors to Dryden Chemicals Limited, Oakville, Ontario, Canada

No Drawing. Original application Nov. 4, 1969, Ser. No. 874,680, now abandoned. Divided and this application Oct. 4, 1971, Ser. No. 186,543

Int. Cl. C08h *5/02, 15/00*

U.S. Cl. 260—17.5 **10 Claims**

The invention relates to the treatment of spent sulfite liquor by changing the base metal lignosulfonates therein to amine lignosulfonates which are then reacted with formaldehyde to produce products which are useful, for instance, as setting control agents in cement, as hydration shale inhibitors, and as fillers in the formation of resins.

3,784,494

PROCESS OF PRODUCING ARTIFICIAL LUMBER FROM UNTREATED SAWDUST, A POWDERED UREA-FORMALDEHYDE RESIN AND WATER

Geza Domokos, 312 Ocean Drive, Miami Beach, Fla. 33139

No Drawing. Filed Mar. 2, 1971, Ser. No. 120,343

Int. Cl. C08g *51/18*

U.S. Cl. 260—17.3 **3 Claims**

This is a process for producing a wood product from natural untreated sawdust and a binder. The binder used is a mixture of powdered incompletely cured thermosetting resin, such as urea-formaldehyde resin and a sufficient amount of a curing agent to fully cure the resin at room temperature. During the process, the binder is mixed with sufficient water to form a paste and the paste is then mixed with the sawdust to form a plastic mass. The mass is molded to the desired shape and completely cured at room temperature and low pressure. It also includes the resulting product which is at least as strong as or stronger than natural wood and is non-flammable, non-warping, non-rotting and resistant to vermin, insects and fugus. It is capable of being nailed, sawed and otherwise shaped with the usual wood working tools.

3,784,495

ROOM TEMPERATURE SOLUBLE MELT-CONDENSED POLYAMIDE INTERPOLYMERS

Jerome William Sprauer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 16, 1971, Ser. No. 208,930

The portion of the term of the patent subsequent to Jan. 25, 1989, has been disclaimed

Int. Cl. C08g *20/20*

U.S. Cl. 260—18 N **6 Claims**

Melt-condensed polyamide interpolymers consisting essentially of at least four different recurring polyamide repeat units in which (a) about 35 to 55 percent of the amide equivalents are polymethylene-ω-aminoacid repeat units of 6 to 20 carbon atoms, (b) about 10 to 30 percent of the amide equivalents are diamine diacid repeat units in which the diamine is polymethylene diamine of 6 to 20 carbon atoms and the diacid is polymethylene diacid of 6 to 20 carbon atoms, (c) about 10 to 30 percent of the amide equivalents are diamine diacid repeat units in which the diamine is polymethylene diamine of 6 to 20 carbon atoms and the diacid is polymethylene diacid of 6 to 20 carbon atoms different from the diacid of (b) above, and (d) about 10 to 30 percent of the amide equivalents are diamine diacid repeat units in which the diamine is polymethylene diamine of 6 to 20 carbon atoms and the diacid is polymethylene diacid of 6 to 20 carbon atoms different from the diacids of (b) and (c) above, or dimerized fatty acid of 16 to 48 carbon atoms, are soluble to the extent of at least about 20 percent in common solvents at room temperature.

3,784,496

RUBBER AND AMINE MODIFIED PHENOLIC RESINS

Harry A. Smith and Erwin H. Kobel, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 24, 1972, Ser. No. 229,177

Int. Cl. C08d *9/10*; C08g *37/18*

U.S. Cl. 260—29.3 **11 Claims**

Phenolic resin adhesives having improved impact strength are obtained by reacting a phenolic-aldehyde resole with a butadiene rubber or rubber latex and ar-hydroxyaniline or a mixture of hydroxyaniline with aniline or a substituted aniline.

3,784,497

TEXTILE STRENGTHENER

Julius F. T. Berliner, Chicago, Ill., assignor to The Hosiery Mate Company, Chicago, Ill.

No Drawing. Filed Dec. 8, 1971, Ser. No. 206,135

Int. Cl. C08f *29/12*

U.S. Cl. 260—29.6 XA **2 Claims**

An improved textile strengthening agent which renders textiles such as nylon stockings and the like, stronger and more durable. The strengthening agent consists essentially of a plastic emulsion containing polyethylene and an acrylic compound, a cationic agent and at least one soluble chelate selected from the group consisting of zinc and zirconium metal chelates. The strengthening agent is prepared and then added in controlled amounts to the water in which the textile is to be washed or otherwise treated.

3,784,498
PROCESS FOR PREPARING LOW EMULSIFIER SYNTHETIC LATEX
Gary W. Ceska, Coraopolis, Pa., assignor to Sinclair-Koppers Company, Pittsburgh, Pa.
No Drawing. Filed Apr. 21, 1972, Ser. No. 246,143
Int. Cl. C08d *1/09*; C08f *1/13*
U.S. Cl. 260—29.6 TA 4 Claims

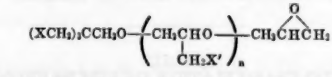
A two-step process for preparing latices containing a small amount (0.1%) or no emulsifier comprising (1) polymerizing a 20–30% portion of one or more monomers with from 1–5% by weight based on total monomers of an ethylenically unsaturated carboxylic acid in aqueous acidic emulsion, and (2) adjusting the pH to 7.0–10.0 with aqueous ammonia, adding the remaining portion of monomers and polymerizing in aqueous basic emulsion to complete conversion.

3,784,499
NONFLAMMABLE COATING COMPOSITIONS
Albert C. Krupnick, Huntsville, and Carlo F. Key, Madison, Ala., and Roger J. Harwell, Ardmore, Tenn., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
No Drawing. Continuation-in-part of abandoned application Ser. No. 84,212, Oct. 26, 1970. This application Sept. 26, 1972, Ser. No. 292,382
Int. Cl. C09d *1/04, 5/18*
U.S. Cl. 260—29.6 S 10 Claims

Nonflammable coating compositions for use in high-oxygen environments include an aqueous suspension of synthetic mica, an alkali metal silicate gelant and a water-base "latex" resin emulsion. Inorganic white and/or color pigments and additives such as glass microballoons are employed to provide a wide range of colors and optical properties.

3,784,500
HALOGENATED EPOXIDES
Carl L. Gibbons, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Continuation-in-part of application Ser. No. 74,205, Sept. 21, 1970, now Patent No. 3,674,812. This application Apr. 20, 1972, Ser. No. 245,751
Int. Cl. C08f *45/32, 45/60*
U.S. Cl. 260—30.4 R 10 Claims

Trihaloneopentyl alcohol is reacted with epihalohydrin and then with base to give an adduct of the formula



where each X and X′ is independently Br or Cl and *n* is an integer of 0 to about 10. Such compounds are useful as plasticizers for polyvinyl chloride, as fire retardants for polyesters and as intermediates.

3,784,501
ACRYLIC POLYBLEND POWDER COATING COMPOSITION
Paul H. Pettit, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Nov. 1, 1972, Ser. No. 302,857
Int. Cl. C08f *29/36, 29/38, 29/46*
U.S. Cl. 260—31.6 8 Claims

The thermoplastic acrylic polymer powder coating composition comprises finely divided particles having a diameter of 1–75 microns wherein the powder particles are a blend of

(A) 50–74.5% by weight of polymethyl methacrylate or a copolymer of methyl methacrylate and an alkyl methacrylate having 4–12 carbon atoms in the alkyl group or a blend of polymethyl methacrylate and a copolymer of methyl methacrylate;

(B) 10–20% by weight of a hydroxy containing acrylic copolymer of methyl methacrylate, an alkyl methacrylate having 2–12 carbon atoms in the alkyl group or an alkyl acrylate having 1–12 carbon atoms in the alkyl group, a hydroxy alkyl acrylate, a methacrylate, and an α,β-ethylenically unsaturated carboxylic acid;

(C) 15–30% by weight of an organic plasticizer;

(D) 0.5–3% by weight of a cross-linking agent such as an alkylated melamine resin or a block polyisocyanate;

the polymer powder particles have a glass transition temperature of 30–60° C. and a melt viscosity of below 75,000 poises measured at 160° C. and can contain pigments and dyes; the novel acrylic polymer powder coating composition is particularly useful as an exterior finish for automobiles and trucks.

3,784,502
BLOCK COPOLYMER COMPOSITIONS
Ramsis Gobran, Roseville, Leon V. Kremer, Cottage Grove, and Dolores O. Ethier, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Application Jan. 27, 1969, Ser. No. 794,354, now Patent No. 3,649,579, which is a continuation-in-part of application Ser. No. 707,976, Feb. 26, 1968. Divided and this application Nov. 10, 1971, Ser. No. 197,506
Int. Cl. C08f *15/00, 3/08, 45/28*
U.S. Cl. 260—33.6 PQ 6 Claims

Adhesives, inks, primers, etc., in which tackifying resins are combined with certain poly alpha-olefin block polymers, have excellent specific adhesion to low energy surfaces such as polyethylene and polypropylene as well as to such other surfaces as metal, wood, plastics, glass and rubber. The polymer is a block alpha-olefin which has the general formula $A—(B—A)_n$ wherein A blocks are at least capable of crystallization and B blocks are substantially amorphous.

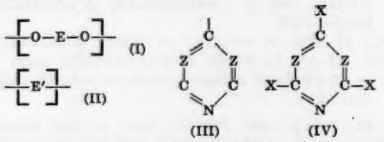
3,784,503
URETHANE COATING BASED ON A SUBSTITUTED ISOCYANURATE-LACTONE ADDITION PRODUCT
John E. Pregler, Wallingford, Conn., assignor to Olin Corporation, New Haven, Conn.
No Drawing. Filed Mar. 8, 1972, Ser. No. 232,918
Int. Cl. C08g *22/06, 51/28*
U.S. Cl. 260—33.6 UB 10 Claims

This invention relates to urethane coating compositions, comprising as a cross-linking agent, an addition product of a substituted isocyanurate with a lactone.

3,784,504
THERMOSET RESINS PREPARED FROM DIHYDRIC PHENOL, DIHALOBENZENOID COMPOUND AND POLYHALOHETEROCYCLIC COMPOUND
Ronald George Feasey, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Continuation of application Ser. No. 801,837, Feb. 24, 1969. This application July 19, 1971, Ser. No. 164,147
Int. Cl. C08g *33/10*
U.S. Cl. 260—37 N 11 Claims

Thermoset resins containing units of Formulae I, II and III, in such proportions that I is in molar excess of II and III is present to the extent of about two-thirds of this molar excess, may be made via a new thermosettable propolymer from a double alkali metal salt of a dihydric phenol HO—E—OH, a dihalobenzenoid compound X—E′—X and a polyhaloheterocyclic compound (IV) where Z is:N. or :C(X′). (X′ is halogen), such as pentachloropyridine or 2,4,6-trichloro-1,3,5-triazine. Some of the alkali metal phenoxide may be omitted initially and

is then added to the incomplete prepolymers for curing. The combination of the dihalobenzenoid compound with an equimolar amount of the alkali metal salt of the dihydric phenol may be replaced by an alkali metal salt of a suitable halophenol.



(I) (II) (III) (IV)

3,784,505
COATING COMPOSITION CONTAINING SILANE, DIKETONE, AND FILLER
Robert Wendell Lerner, Hossein Hayati, and John Robert Flasch, Adrian, Mich., assignors to Stauffer Chemical Company, New York, N.Y.
No Drawing. Filed Dec. 30, 1971, Ser. No. 214,426
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 SB **14 Claims**

A coating composition containing a hydrolyzed and condensed organotrihydrocarbonoxy silane, a diketone, and a particulate solid. The coating composition will impart galvanic protection to metal surfaces coated therewith.

3,784,506
POLYVINYLIDENE FLUORIDE COATING COMPOSITIONS
Joseph A. Vasta, Woodbury, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of applications Ser. No. 37,064, May 13, 1970, and Ser. No. 174,280, Aug. 23, 1971, both now abandoned. This application Feb. 25, 1972, Ser. No. 229,509
Int. Cl. C08g *51/04*
U.S. Cl. 260—39 R **3 Claims**

A coating composition containing polyvinylidene fluoride, an epoxy resin, an aminoplast resin, and optionally, TiO_2 or zirconium silicate and zinc, all in an organic liquid carrier, useful for lining water heater tanks and industrial containers.

3,784,507
STABILIZED POLYESTER FILM
David M. Braunstein, Edison, N.J., assignor to Celanese Corporation, New York, N.Y.
No Drawing. Filed Mar. 4, 1971, Ser. No. 121,157
Int. Cl. C08g *17/133, 51/58*
U.S. Cl. 260—45.7 P **3 Claims**

A process is disclosed and claimed employing a catalytic system of a manganous salt and antimony trioxide in combination with di(polyoxyethylene) hydroxymethyl phosphonate to produce polyester resins which exhibit improved thermal stability and embrittlement resistance in the resultant film. The thermally stable polyester films of this invention exhibit utility as films in xerography, tape recorders and the like.

3,784,508
RAPID CURE POLYEPOXIDE OXAZINE OR OXAZOLINE SYSTEMS
Donald A. Tomalia and Robert J. Thomas, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Continuation-in-part of abandoned application Ser. No. 131,406, Apr. 5, 1971. This application Sept. 15, 1972, Ser. No. 289,324
Int. Cl. C08g *30/14*
U.S. Cl. 260—47 EN **4 Claims**

This invention relates to compositions of matter consisting essentially of (1) a latent curable prepolymer of a polyepoxide and an oxazine or oxazoline compound and (2) a polymerization accelerator which is soluble in said polymer at a temperature less than about 90° C. in an amount of from about 1 to 5 percent by weight of prepolymer and which is a compound selected from the group consisting of compounds of the formula

$$R(X)_n$$

wherein R is an aliphatic radical, X is halogen, COOH or SH and n is an integer of at least 2; and

$$R(X)_n$$

wherein R is an aromatic radical, and X is OH or SH and n is an integer of from 1 to 3.

3,784,509
FIRE RETARDANT COMPOSITIONS
Anderson O. Dotson, Jr., New Brunswick, and Jack Newcombe and Lionel T. Wolford, Freehold, N.J., assignors to Cities Service Company, New York, N.Y.
No Drawing. Filed Sept. 24, 1971, Ser. No. 183,696
Int. Cl. C09k *3/28*
U.S. Cl. 260—45.75 B **5 Claims**

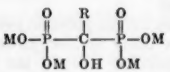
Fire retarding agents having the structure of substituted imides, with the imide portion derived from a halogenated Diels-Alder adduct of an unsaturated carboxylic compound such as maleic anhydride and a diene such as cyclopentadiene and the substituent group on the nitrogen being alkyl or aromatic, are useful in flame retardant plastic compositions.

3,784,510
NICKEL PYROLYZATE STABILIZERS FOR OLEFIN POLYMERS
Peter Kartschmaroff, Arlesheim, Basel-Land, Paul Moser, Basel, and Kurt Berger, Allschwil, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Original application July 16, 1970, Ser. No. 55,615, now Patent No. 3,660,444, dated May 2, 1972. Divided and this application Feb. 7, 1972, Ser. No. 224,291
Claims priority, application Switzerland, July 31, 1969, 11,650/69
Int. Cl. C08f *45/62*
U.S. Cl. 260—45.75 N **6 Claims**

Pyrolyzates are produced by heating the nickel salts of phosphonic acid semiesters. The obtained pyrolyzates are stabilizers for synthetic high-molecular materials.

3,784,511
COLOR STABILIZATION OF FIBERS FROM ACRYLONITRILE POLYMERS
James Ray Kirby, Durham, N.C., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Mar. 28, 1972, Ser. No. 238,958
Int. Cl. C08f *45/58, 45/62*
U.S. Cl. 260—45.95 P **3 Claims**

Color stabilization of acrylonitrile-containing polymers may be accomplished through treating acrylonitrile-containing polymers and articles formed therefrom with an organophosphorus compound not exceeding 5 weight percent of said polymer, said compound having the general formula:



wherein M is a member selected from the group consisting of hydrogen, sodium, lithium, potassium, and R is a member selected from the group consisting of an alkyl radical having one to eleven carbon atoms, a phenyl radical, and an alkyl phenyl radical no more than eight carbon atoms.

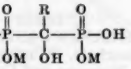
3,784,512

COLOR STABILIZED ACID-DYEABLE ACRYLONITRILE-CONTAINING FIBERS

James C. Masson, Chapel Hill, and Albert M. Hall, Durham, N.C., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Mar. 28, 1972, Ser. No. 238,959
Int. Cl. C08f 45/58, 45/62
U.S. Cl. 260—45.95 P 3 Claims

A method and product is herein described for imparting color stability to acid-dyeable acrylonitrile/bromine-containing polymers capable of being formed into filaments comprising forming an acid-dyeable acrylonitrile/bromine-containing polymer comprising at least 60 weight percent acrylonitrile, 1 to 15 weight percent of a bromine-containing monomer, and 1 to 8 weight percent of a basic monomer selected from the group consisting of free radical polymerizable unsaturated aliphatic amines, substituted ammonium bases, and mixtures thereof, and contacting said polymers with an organophosphorus compound in an amount not exceeding about one equivalent per equivalent of said aliphatic amines, substituted ammonium basic groups, or mixtures thereof, incorporated in said polymer, said organophosphorus compound being represented by the formula formula:



wherein M is a member selected from the group consisting of hydrogen, sodium, lithium, potassium, and R is a member selected from the group consisting of an alkyl radical having one to eleven carbon atoms, a phenyl radical, and an alkyl phenyl radical containing no more than eight carbon atoms.

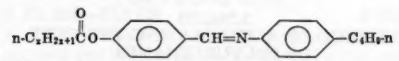
3,784,513

N-(p-ALKANOYLOXYBENZYLIDENE)-p'-n-BUTYLANILINE

Edward L. Steiger and Heinz J. Dietrich, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

No Drawing. Filed Aug. 4, 1971, Ser. No. 169,094
Int. Cl. C07c 135/00
U.S. Cl. 260—479 R 3 Claims

There is disclosed the preparation of novel liquid-crystal compositions of the structure:



where x equals 1 to 10, typically 1 to 5. The compounds are prepared by the reaction of para-n-butylaniline and para-n-alkanoyloxybenzaldehyde.

3,784,514

RAPID CURING PHENOLIC-ALDEHYDE RESIN COMPOSITION POLYMER MODIFIED WITH A HETEROCYCLIC NITROGEN-CONTAINING COMPOUND

George T. Tiedeman, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

No Drawing. Continuation-in-part of abandoned application Ser. No. 822,868, May 5, 1969. This application May 26, 1971, Ser. No. 147,186
Int. Cl. C08g 9/00, 9/06
U.S. Cl. 260—51.5 45 Claims

Described herein are resin products having particular utility as rapid curing adhesives for wood and other materials, and processes for making the resin compositions. The products are made by reacting an aldehyde condensation polymer containing reactive alkylol groups, such as a phenol-formaldehyde condensation polymer, with a heterocyclic nitrogen-containing compound to obtain an amine-modified polymer. When the resulting reaction product is blended with an appropriate curing agent, such as an aldehyde, the compositions cure very rapidly at ambient temperature. When pieces of wood or other materials are spread with the preferred adhesives employing the resin compositions of this invention and brought into contact with another wood surface the bond strength develops within minutes. The durability, strength and flexibility of the adhesives of this invention under adverse weathering conditions are excellent.

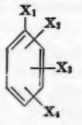
3,784,515

PHENOLIC-RAPID CURING RESIN COMPOSITIONS COMPRISING THE REACTION PRODUCT OF ALDEHYDE CONDENSATION POLYMER WITH A PRIMARY AROMATIC AMINE FURTHER REACTED WITH A CURING AGENT

Harlan G. Freeman, Gene F. Baxter, and George Graham Allan, Seattle, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

No Drawing. Continuation-in-part of application Ser. No. 113,681, Feb. 8, 1971, which is a continuation-in-part of application Ser. No. 821,996, May 5, 1969, both now abandoned, which in turn is a continuation-in-part of application Ser. No. 639,270, May 18, 1967, now Patent No. 3,518,159. This application Aug. 25, 1971, Ser. No. 174,942
Int. Cl. C08g 9/06, 9/32
U.S. Cl. 260—51.5 55 Claims

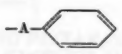
This invention describes resin products having particular utility as rapid curing adhesives for wood and other materials, and processes for making the resin compositions. The reaction products are made by reacting an aldehyde condensation polymer, such as a phenol-formaldehyde condensation polymer, with a primary aromatic amine having the formula:

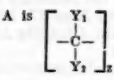


where:

X_1 is $-NH_2$, $-CH_2NH_2$

X_2 is $-X_1$, $-OH$, $-$alkoxy

X_3 is $-X_1$, $-COOH$, $-NHCOCH_3$, $-NO_2$, $-OH$, $-C_1$ to C_4 alkyl, $-H$, $-A-$  , $-$halogen, $-$halogenated alkyl, $-$alkoxy

X_4 is C_1 to C_4 alkyl, $-H$, $-$aryl and A is  , $-SO_2-$, $-NH-$, $-O-$, $-S-$, $-C{=}C-$, $-S-S-$, $-N{=}N-$

where Y_1 and Y_2 are hydrogen or alkyl radicals having from 1 to 3 carbon atoms and Z is an integer from 0 to 2, to obtain an amine-modified polymer. On blending an appropriate hardening agent with the amine-modified polymer, the composition cures very rapidly at ambient temperature. When pieces of wood or other materials are spread with the preferred adhesives employing the resin compositions of this invention and brought into contact with another wood or other surface the bond strength develops within minutes.

3,784,516

RAPID CURING RESIN COMPOSITIONS EMPLOYING A PHENOL-ALDEHYDE CONDENSATION POLYMER REACTED WITH A BIS-ARYL AMINE

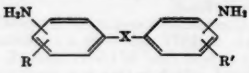
Gene F. Baxter, Harlan G. Freeman, and George T. Tiedeman, Seattle, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

No Drawing. Continuation-in-part of abandoned application Ser. No. 821,961, May 5, 1969. This application June 1, 1971, Ser. No. 148,905

Int. Cl. C08g 9/06, 9/32

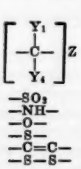
U.S. Cl. 260—51.5 45 Claims

Described herein are resin products having particular utility as rapid curing adhesives for wood and other materials, and processes for making the resin compositions. The products are made by reacting an aldehyde condensation polymer containing reactive alkylol groups, such as phenol-formaldehyde condensation polymer, with di-substituted bis-aryl amines having the formula:



where R and R′ are alkoxy, amino, hydrogen, hydroxyl, nitro, carboxyl or C_1 to C_4 alkyl

and X is



where Y_1 and Y_2 are hydrogen or alkyl radicals having from 1 to 3 carbon atoms and Z is an integer ranging from 0 to 2;

to obtain an amine-modified polymer. When the resulting reaction product is blended with an appropriate curing agent, such as an aldehyde, the compositions cure very rapidly at ambient temperature. When pieces of wood or other materials are spread with the preferred adhesives employing the resin compositions of this invention and brought into contact with another wood surface the bond strength develops within minutes. The durability, strength and flexibility of the adhesives of this invention under adverse weathering conditions are excellent.

3,784,517

PREPARATION OF POLYBENZIMIDAZOLES IN THE PRESENCE OF A SULFONE SOLVENT

Frederick L. Hedberg, Dayton, Ohio, and Carl S. Marvel, Tucson, Ariz., assignors to the United States of America as represented by the Secretary of the Air Force

No Drawing. Filed June 27, 1972, Ser. No. 266,814

Int. Cl. C08g 33/02

U.S. Cl. 260—63 R 15 Claims

A one-step process for preparing polybenzimidazoles is disclosed that comprises reacting an aromatic tetraamino compound with the diphenyl ester or anhydride of an aromatic dicarboxylic acid in the presence of an aliphatic or aromatic sulfone solvent or reaction medium. The process provides in quantitative yields high molecular weight products that are particularly suitable for use in fiber formation.

3,784,518

METHOD FOR PRODUCING ALKYL IODIDES

Frank E. Paulik, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 29, 1972, Ser. No. 293,602

Int. Cl. C07c 19/00

U.S. Cl. 260—65 F 11 Claims

Alkyl iodides in which the alkyl group contains from 1 to 6 carbon atoms are prepared by reacting hydrogen, iodine and the corresponding alkanol at a temperature from about 25° to about 150° C. and a pressure from about atmospheric to about 500 p.s.i.g. in contact with a catalyst composition comprising metallic rhodium, ruthenium or iridium or the iodides of these metals supported on an inert material.

3,784,519

CATALYST COMPOSITION FOR THE PRODUCTION OF TRIOXANE POLYMERS

Albrecht Hilt, Ludwigshafen, and Franz Schmidt and Erich Schwartz, Mannheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Original application Apr. 15, 1970, Ser. No. 28,956, now abandoned. Divided and this application Jan. 17, 1972, Ser. No. 218,461

Claims priority, application Germany, Apr. 18, 1969, P 19 19 744.5

Int. Cl. C08g 1/20

U.S. Cl. 260—67 FP 10 Claims

A process for polymerizing trioxane with a special catalyst composition based on a blend of hydrofluoric acid and fluoboric acid.

3,784,520

SEGMENTED THERMOPLASTIC COPOLYESTERS

Guenther Kurt Hoeschele, Wilmington, Del., assignor to E. I. du Pont de Nemours and Co., Wilmington, Del.

No Drawing. Filed Jan. 26, 1972, Ser. No. 221,098

Int. Cl. C08g 17/08, 23/22

U.S. Cl. 260—75 R 9 Claims

Segmented thermoplastic copolyesters containing recurring long chain ester units derived from dicarboxylic acids and poly(alkylene oxide) glycol having a molecular weight of about 400–3500 and a carbon to oxygen ratio of about 2.0–2.4 and short chain ester units derived from dicarboxylic acids and low molecular weight diols. At least 70% of the dicarboxylic acid used is terephthalic acid and at least 70% of the low molecular weight diol is 1,4-butanediol. The short chain ester units constitute about 25–65% by weight of the polymer. Such copolyesters rapidly harden from the molten state and have outstanding physical properties over a wide range of temperatures and are especially resistant to oil swell.

3,784,521

METHOD OF ACCELERATING THE CURE OF POLYURETHANES

Anthony F. Finelli and John R. Stanley, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Apr. 11, 1972, Ser. No. 243,044

Int. Cl. C08g 22/16, 22/34

U.S. Cl 260—75 NB 5 Claims

The cure of liquid polyurethane reaction mixtures containing a ketone diamine curative is accelerated by the use of polyhydroxy benzenes and polyhydroxyl carbonyl benzenes containing two to four hydroxyl groups when used in about one-tenth to two parts per hundred parts of the polyurethane.

3,784,522

SELF-BONDING ELASTOMERIC SEALANT

Basil P. Gray, Negley, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio

No Drawing. Filed Oct. 16, 1972, Ser. No. 297,767

Int. Cl. C08g 22/04

U.S. Cl. 260—77.5 CR 10 Claims

A sealant material for steel or concrete tunnel segments and the like is the product of a urethane type reaction between a hydroxy terminated polybutadiene liquid resin with a polyfunctional isocyanate incorporating a monomeric halogenated phosphate ester.

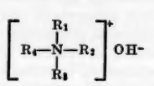
3,784,523

REACTION OF HALOMETHYLATED POLYMERS WITH QUATERNARY AMMONIUM SALTS OF PROTECTED AMINO ACIDS

Albert Loffet, Braine-le-Chateau, Belgium, assignor to UCB, Societe Anonyme, Saint-Gilles-lez-Brussels, Belgium

No Drawing. Filed July 21, 1970, Ser. No. 56,972
Claims priority, application Belgium, July 25, 1969, 37,542
Int. Cl. C08g 20/00; C07c 103/52, 101/42
U.S. Cl. 260—78 A 6 Claims

The present invention relates to a process for binding an amino acid having an amine protective group fixed on the amino group to a styrene-divinylbenze polymer carrying halomethyl groups, by reacting a salt of the so protected amino acid with the said halomethylated styrene-divinylbenzene polymer in an inert solvent to form an amino acid ester useful in solid phase peptide synthesis, whereby the salt is dissolved in said solvent and the polymer is swelled in said solvent, the improvement wherein the salt of the said protected amino acid is a salt of a quaternary ammonium hydroxide of the formula:



wherein R_1, R_2, R_3 and R_4, taken separately, each represents a member selected from the group consisting of alkyl having 1 to 18 carbon atoms, cycloalkyl having 5 to 12 carbon atoms, phenyl, naphthyl, aralkyl having 7 to 16 carbon atoms, or R_1 and R_2 together with the quaternary nitrogen atom form piperidinyl or morphinyl, or R_1, R_2 and R_3 taken together form pyridyl or 2-styryl-pyridyl.

3,784,524

URETHANE/THIOETHER-CONTAINING POLYENE COMPOSITION AND THE REACTION PRODUCT THEREOF

Charles R. Morgan, Silver Spring, Md., assignor to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed June 25, 1971, Ser. No. 156,921
Int. Cl. C08g 22/04
U.S. Cl. 260—77.5 CR 4 Claims

A urethane/thioether-containing polyene composition is prepared and is cured in the presence of a free radical generator, such as ultraviolet irradiation, and a polythiol, forms odorless, solid, elastomeric products. The cured products may be used as sealants, coatings, adhesives, silverless photographic materials, printing plates, and molded articles.

3,784,525

LONG-CHAIN DIGLYCIDYL ESTERS

Dieter Baumann, Birsfelden, and Juergen Habermeier, Pfeffingen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Apr. 12, 1972, Ser. No. 243,459
Int. Cl. C08f 27/00; C07d 1/18
U.S. Cl. 260—78.4 EP 6 Claims

New diglycidyl esters are obtained by glycidylizing butadiene-acrylonitrile copolymers or butadiene polymers which have terminal carboxyl group. The new diglycidyl esters can be converted into flexible mouldings or coatings by curing with conventional epoxide resin hardeners, with the flexibility of the mouldings being to a relatively large extent independent of the temperature and being retained up to −50° C.

3,784,526

WATER SOLUBLE POLYMER COMPOSITIONS AND PROCESS FOR PREPARATION THEREOF

Alain Ribba, 16 Rue Ronsard, Chateaurenault, France

No Drawing. Filed Feb. 18, 1972, Ser. No. 227,650
Claims priority, application France, Feb. 18, 1971, 6,571
Int. Cl. C08f 15/40
U.S. Cl. 260—78.5 R 6 Claims

The invention provides a process for making novel water-soluble polymers which are useful as flocculating agents. These polymers are formed by polymerization of (a) itaconic acid, or the water soluble sodium or ammonium salts thereof, in proportion of from 0.2 to 15 percent by weight; (b) a monomer of an amide of unsaturated alpha-beta monocarboxylic acid, such as acrylamide or immediate derivatives thereof, in proportion of from 5 to 95 percent by weight; (c) an unsaturated water-soluble monomer, for example: acrylic acid or maleic acid, and the salts of said acids; allylalcohol, and derivatives thereof. The polymerization is carried out by dispersing the three above-described monomers (a), (b) and (c) in a water insoluble organic medium, e.g., toluene in presence of a surface-active agent such as sulphonated petroleum distillate with a molecular weight in the range of 300 to 1000, a polymerization catalyst, in proportion of 0.005 to 0.2 percent by weight, e.g., ammonium persulfate. A Redox reducing agent is preferable in this system.

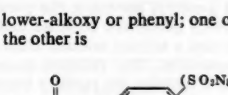
3,784,527

NOVEL COMPOUNDS AND PROCESS

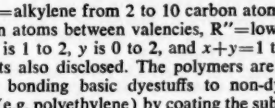
Adnan A. R. Sayigh and Fred A. Stuber, North Haven, and Henri Ulrich, North Branford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 15,852, Mar. 2, 1970. This application Nov. 27, 1970, Ser. No. 93,446
The portion of the term of the patent subsequent to Oct. 17, 1989, has been disclaimed
Int. Cl. C08f 27/06, 27/08
U.S. Cl. 260—78.5 T 3 Claims

Radiation (thermal and light)-sensitive polymers are provided which are characterized by the recurring unit of the formula:



wherein R' is lower-alkoxy or phenyl; one of R_2 and R_3 is hydrogen and the other is



wherein A=alkylene from 2 to 10 carbon atoms having 2 to 6 carbon atoms between valencies, R''=lower-alkyl or halogen, x is 1 to 2, y is 0 to 2, and $x+y=1$ to 3. Water soluble salts also disclosed. The polymers are useful for chemically bonding basic dyestuffs to non-dyereceptive substrates (e.g. polyethylene) by coating the substrate with radiation sensitive polymer and exposing the coated substrate to irradiation. The treated substrate is then contacted with a basic dyestuff which bonds thereto via the free carboxylic groups in the coating. The irradiation can be carried out imagewise to produce an appropriate image on the substrate which image is developed by dissolving out unexposed radiation-sensitive polymer prior to application of the dye. Bonding of the radiation-sensitive

polymers of the invention to substrates in the above manner can be also be employed as a means of rendering hydrophilic a variety of substrates which are hydrophobic.

3,784,528
PREPARATION OF ALKOXYLATED RESINS
Dietrich Pirck, Reinbek, Gundolf Fuchs, Meilsen, and Gerhard Sachse, Hamburg, Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany
No Drawing. Filed Sept. 28, 1972, Ser. No. 293,279
Claims priority, application West Germany, Oct. 4, 1971, P 21 49 471.3
Int. Cl. C08f *1/11, 15/02, 27/00*
U.S. Cl. 260—78.5 T 13 Claims

Resin products are prepared by alkoxylation of copolymers of vinyl aromatic hydrocarbons such as styrene, with alpha, beta-unsaturated dicarboxylic acid half esters such as the maleic acid-n-butyl half ester. The thus-formed resin products are useful as lacquer resin components for baking varnishes.

3,784,529
POLYMERIC QUATERNARY AMMONIUM COMPOUNDS AND METHODS FOR MAKING SAME
John W. Bayer, Perrysburg, and Edgardo Santiago, Toledo, Ohio, assignors to Owens-Illinois, Inc.
No Drawing. Original application Oct. 19, 1965, Ser. No. 498,088, now Patent No. 3,489,663, dated Jan. 13, 1970. Divided and this application May 26, 1969, Ser. No. 827,942
Int. Cl. C08g *33/02*
U.S. Cl. 260—79.3 M 14 Claims

Disclosed are new polymeric quaternary compounds and methods for making them. The quaternized atoms are in the polymer chain backbone. Also disclosed in an electrolytic method of polymerization of unsaturated monomers in the presence of a polymeric ternary or a polymeric quaternary ammonium compound as a conducting electrolyte.

3,784,530
HYDROCARBON-DERIVED RESIN
Robert A. Osborn, Stow, David R. St. Cyr, Uniontown, and Herbert L. Bullard, Norton Village, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Filed Jan. 20, 1972, Ser. No. 219,497
Int. Cl. C08d *9/08*; C08f *15/40*
U.S. Cl. 260—80.7 4 Claims

A resinous material characterized with a softening point in the range of about 60° C. to about 110° C. prepared by polymerizing piperylene, 2-methyl-2-butene, dicyclopentadiene and α-methyl styrene in the presence of a catalyst selected from aluminum chloride and ethyl aluminum dichloride and a solvent selected from aliphatic and aromatic hydrocarbons. The resinous material has particular utility as a tackifier for rubbery butadiene styrene copolymers.

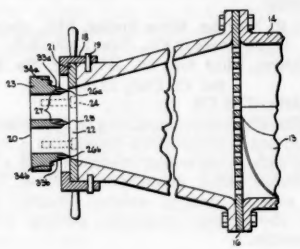
3,784,531
PROCESSING OF RUBBER
Stanley D. Zimmerman, Morrisville, Pa., and Paul O. McCoy, Hightstown, N.J., assignors to Cities Service Company, New York, N.Y.
No Drawing. Filed Dec. 23, 1971, Ser. No. 211,639
Int. Cl. C08d *3/04, 5/04*; C08f *15/40*
U.S. Cl. 260—85.3 H 13 Claims

A halogen is incorporated into a solution of rubber dissolved in an organic solvent to effect halogenation of the rubber. Anhydrous ammonia is then dissolved in the rubber solution and reacts with any free halogen, hydrogen halide, or hypohalide present in the solution after halogenation of the rubber. The ammonium halide reaction product is filtered or washed from the halogenated rubber solution and the organic solvent is vaporized and removed from the halogenated rubber. This invention can be employed to advantage in the neutralization of brominated or chlorinated butyl rubber.

3,784,532
BULK POLYMERIZATION PROCESS MODIFIED WITH SOLVENT TO REDUCE RESIDUAL MONOMER CONTENT
Robert P. Fellmann, Wrightstown, and Jong Jai Whang, Southampton, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.
No Drawing. Continuation-in-part of application Ser. No. 709,785, Mar. 1, 1968. This application Sept. 18, 1970, Ser. No. 73,628
Int. Cl. C08f *3/64, 3/66, 15/18*
U.S. Cl. 260—86.1 E 5 Claims

The polymerization of a monomer system is improved by the presence of 1 to 30 percent by weight based on the total weight of the system of a non-polymerizable, chemically inert, volatile solvent. The system is characterized as one which: (1) if bulk polymerized would produce a polymer product which would degrade or depolymerize upon application of conditions necessary to remove residual monomer by volatilization and which product would contain amounts of residual monomer sufficient to affect its physical properties; (2) if bulk polymerized would be limited in reaction rate by the difficulty of diffusion of monomer to reactive sites, and/or (3) if bulk polymerized would produce a polymer product which would limit reaction rate of further polymerization by inhibiting diffusion of monomer to reactive sites.

3,784,533
APPARATUS FOR IMPARTING GLOSS TO SOAP
Thomas F. Mach, 2141 Sherwood Ave., St. Paul, Minn. 55119
Filed Mar. 8, 1971, Ser. No. 121,716
Int. Cl. B28b *11/16*; B29c *17/10*
U.S. Cl. 264—146 8 Claims

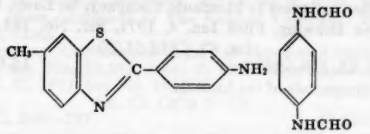


A method and apparatus for improving the gloss on extruded bar soap from a plodder by using blades to cut away an unfinished surface to form a glossy face.

3,784,534
YELLOW SULFUR DYES
Satosi Yosioka, Sinobu Tokunaga, Tomoyoshi Tamenori, and Sigeru Tamura, Fukuyama, and Morio Wada, Hiroshima-ken, Japan, assignors to Nippon Kayaku Co., Ltd., Tokyo, Japan
No Drawing. Filed Feb. 24, 1972, Ser. No. 229,192
Claims priority, application Japan, Feb. 26, 1971, 46/9,309
Int. Cl. C09b *49/00*
U.S. Cl. 260—128 4 Claims

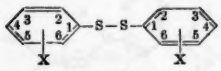
This invention relates to clear and pure yellow sulfur dyes, which can be obtained by blending the compounds

represented by the following Formulas I, II, and III with an optional blending ratio and sulfurizing:



(I)

(II)



(III)

(in the Formula III X is a amino, nitro, or formylamino radical substituted at 2,2' or 4,4').

3,784,535

NONAPEPTIDE INTERMEDIATE TO GONADOTROPIN RELEASING HORMONE

George Rogelio Flouret, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,159

Int. Cl. C07c *103/52;* C07g *7/00;* C08h *1/00*
U.S. Cl. 260—112.5 8 Claims

The synthesis of the nonapeptide His-Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-amide carrying easily removable protective groups on the Ser, Tyr, Arg and optionally on the His moieties is described. The correspondingly protected octapeptide is used as the starting material. The nonapeptide, upon removal of any N^{α}-protective group on the histidine moiety is an important intermediate for the preparation of the gonadotropin-releasing hormone.

3,784,536

PROCESS FOR REDUCING THE NUCLEIC ACID CONTENT OF SINGLE CELL PROTEIN AFFORDING MICROORGANISMS

Cavit Akin, Oakbrook, and Kwei C. Chao, Homewood, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Feb. 4, 1971, Ser. No. 112,779

Int. Cl. A23j *1/00, 1/18*
U.S. Cl. 260—112 10 Claims

The nucleic acid content of single-cell protein (SCP) materials is reduced to a level acceptable in food products by treatment of the whole cells with aqueous ethanolic mineral acid at elevated temperatures within the range from 60° to 125° C. Removal of nucleic acids without substantial removal of protein material is accomplished by limiting the treating time to about 5 to 30 minutes.

3,784,537

CONJUGATION OF UNSATURATED FATTY MATERIALS

Roland Pierre Franz Scharrer, Pelham, N.Y., assignor to Arizona Chemical Company, New York, N.Y.

No Drawing. Filed Dec. 17, 1971, Ser. No. 209,407

Int. Cl. C09f *7/08;* C11c *3/14*
U.S. Cl. 260—97.5 11 Claims

A process for treating unsaturated fatty materials is given whereby they are conjugated in a homogeneous system by heating in the presence of substituted aryl thiols, monosulfides, and polysulfides.

3,784,538

CONTROLLING A HIGH-PRESSURE REACTOR

Helmut Pfannmueller, Brasschaat, Antwerp, Belgium, and Friedrich Urban, Limburgerhof, and Oskar Buechner, Hans Gropper, and Wolf Sistig, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Sept. 20, 1971, Ser. No. 182,006

Claims priority, application Germany, Sept. 25, 1970, P 20 47 290.6

Int. Cl. C08f *1/60, 3/04*
U.S. Cl. 260—94.9 R 6 Claims

A process for polymerizing olefins at high pressure in tubular reactors in which the pressure is lowered at intervals for short periods, the whole of the tubular reaction zone being subdivided one or more times and the decreases in pressure being carried out in only one subdivision, and a number of examples of construction of appropriate reaction zones and control equipment for carrying out the process.

3,784,539

PROCESS FOR THE POLYMERIZATION OF OLEFINS

Morris R. Ort, Seabrook, Tex., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 7, 1971, Ser. No. 178,431

Int. Cl. B01j *11/84;* C08f *1/56, 3/06*
U.S. Cl. 260—94.9 C 11 Claims

Olefins are polymerized in the presence of hydrogen as a molecular weight control agent with a Ziegler-type catalyst composition comprising a mixture of a compound of vanadium and a reducing agent which is an organoaluminum compound and an alkylaluminum alkoxide, said composition being prepared by combining said components in such order that said aluminum alkoxide is present prior to combination of said vanadium compound with said organoaluminum compound. The catalyst so prepared enhances the ability of hydrogen to act as a chain-transfer agent in controlling molecular weight, that is, lower molecular weight polymers can be produced at a given hydrogen concentration or lesser amounts of hydrogen are required to produce polymer products having specified molecular weights.

3,784,540

PROCESS OF PREPARING SOLUBLE HEMA-BASED POLYMERS

Karel Kliment, Princeton, and John M. Rutherford, Jr., North Brunswick, N.J., assignors to National Patent Development Corporation, New York, N.Y.

No Drawing. Filed Oct. 5, 1971, Ser. No. 186,796

Int. Cl. C08f *15/16, 15/18*
U.S. Cl. 260—86.1 E 15 Claims

Solvent soluble solid hydrophilic polymers and copolymers of hydroxyethyl methacrylate and other hydroxyalkyl acrylates and methacrylates are prepared by polymerizing the monomer in an organic solvent or diluent for the monomer which is a non-solvent for the polymer having a coefficient of swelling of not over 2. preferably not over about 1.5 and a temperature of precipitation of 0 or above, preferably 30° C. or above, while maintaining

the solids content in solution below that at which the polymer is still completely soluble in dimethyl formamide at 10% concentration. Gradual feeding of monomer can be used.

3,784,541

POLYAMINE COMPOUNDS AND METHODS FOR THEIR PRODUCTION

Townley P. Culbertson and Theodore H. Haskell, Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

No Drawing. Filed Jan. 13, 1972, Ser. No. 217,626

Int. Cl. C07c *47/18*

U.S. Cl. 260—210 R **1 Claim**

5-O-(5-amino-5-deoxy-D-xylofuranosyl)-N^1-(4 - amino-2-hydroxybutyryl) - 4 - O - (2,6-diamino-2,6-dideoxy-D-glucopyranosyl) - 2 - deoxystreptamine, also known as aminodeoxybutirosin A. 5 - O - (5-amino-5-deoxy-D-ribofuranosyl)-N^1-(4 - amino - 2 - hydroxybutyryl)-4-O-(2,6-diamino-2,6-dideoxy - D - glucopyranosyl)-2-deoxystreptamine, also known as aminodeoxybutirosin B. These compounds can exist in free base and in acid-addition salt forms. They have a wide spectrum of antibacterial activity. They can be produced from butirosin A and butirosin B, respectively, by the sequence of reactions which comprises forming the tetra-(trifluoroacetyl) derivative, converting the primary alcohol group to an arylsulfonate ester, converting the arylsulfonate ester group to the azido group by reaction with sodium azide, reducing the azido group to the amino group by catalytic hydrogenation, and hydrolyzing the trifluoroacetyl groups.

3,784,542

BENZODIAZEPIN-2-ONES

Joseph Hellerbach, Basel, Switzerland, and Armin Walser, West Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 10,053, Feb. 9, 1970. This application Aug. 4, 1971, Ser. No. 169,564

Int. Cl. C07d *53/06*

U.S. Cl. 260—239.3 D **21 Claims**

1-substituted benzodiazepin-2-ones, derivatives thereof, and processes for the preparation of same are described. These compounds are useful as anti-convulsants, muscle relaxants and sedatives.

3,784,543

4-[N-(5-NITRO-2-THIAZOLYL)-FORMIMIDOYL]-THIOMORPHOLINES AND OXIDES

Atso Ilvespaa, Neu-Allschwill, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

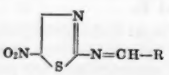
No Drawing. Continuation-in-part of abandoned application Ser. No. 881,637, Dec. 2, 1969. This application June 9, 1971, Ser. No. 151,572

Claims priority, application Germany, Oct. 28, 1970, P 20 52 990.2

Int. Cl. C07d *91/34*

U.S. Cl. 260—240 G **10 Claims**

Compounds of the formula



(I)

in which R represents a thiomorpholino residue which is substituted at at least one carbon atom and/or is oxidized at the sulfur atom, and their salts are useful as anti-parasitary and antibacterial agents.

3,784,544

N-(1-ALKEN-1-YL)-AMINO-S-TRIAZINES

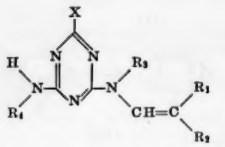
John P. Chupp, Kirkwood, and Ching C. Tung, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Jan. 4, 1971, Ser. No. 103,881

Int. Cl. C07d *55/20*

U.S. Cl. 260—249.8 **15 Claims**

Compounds of the formula



where

X represents chloro or alkylthio of a maximum of 4 carbon atoms;

R_1 represents alkyl of a maximum of 2 carbon atoms;

R_2 represents alkyl of a maximum of 4 carbon atoms;

R_3 and R_4 each represent alkyl of a maximum of 4 carbon atoms.

These compounds have been found to be superior herbicides.

3,784,545

1-(5-PHENYL-4-OXO-2-OXAZOLIN-2-YL)-4-CINNAMOYLPIPERAZINES

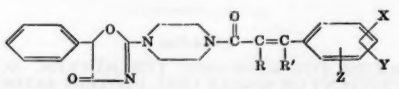
Cheuk Man Lee, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed May 31, 1972, Ser. No. 258,144

Int. Cl. C07d *51/72*

U.S. Cl. 260—240 J **8 Claims**

1-(5-phenyl-4-oxo-2-oxazolin - 2 - yl) - 4 - cinnamoylpiperazines represented by the formula



wherein: R is hydrogen or loweralkyl; R' is hydrogen or loweralkyl; and X, Y and Z each are hydrogen, halogen or loweralkoxy. The compounds exhibit anti-depressant activity.

3,784,546

O(2-DIETHYLAMINO - 4-METHYL-6-PRIMIDINYL) O,O-DIMETHYL PHOSPHOROTHIOATE AND ITS SALTS

Stuart Peter Sharpe and Brian Kenneth Snell, Bracknell, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Original application Sept. 9, 1968, Ser. No. 758,579, now Patent No. 3,651,224. Divided and this application Sept. 30, 1971, Ser. No. 185,346

Claims priority, application Great Britain, Sept. 21, 1967, 43,133/67

Int. Cl. C07d *51/36*

U.S. Cl. 260—256.5 R **4 Claims**

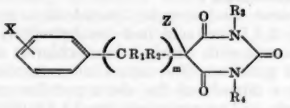
O(2-diethylamino-4-methyl - 6 - pyrimidinyl)O,O - dimethyl phosphorothioate. This compound has pesticidal properties and is characterized by its extremely low toxicity to mammals. Pesticidal compositions and methods of using the same to combat pests are also disclosed. The acid addition salts of the indicated compound may also be used.

3,784,547
SELECTED 5-SUBSTITUTED-5-PHENYLALKYL BARBITURIC ACIDS

Carlos M. Samour, Wellesley, and Julius A. Vida, Boston, Mass., assignors to The Kendall Company, Walpole, Mass.

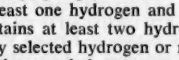
No Drawing. Continuation-in-part of abandoned application Ser. No. 88,193, Nov. 9, 1970. This application Sept. 17, 1971, Ser. No. 181,543
Int. Cl. C07d *51/20*
U.S. Cl. 260—257 **18 Claims**

Selected 5-substituted - 5 - phenylalkyl barbituric acids having the formula



(I)

wherein *m* is 1 or 2; R_1 and R_2 are independently selected hydrogen, methyl or ethyl, with the provisos that the radical $-(CR_1R_2)_m$ can contain no more than one ethyl group or two methyl groups, that when *m* is 1 said radical contains at least one hydrogen and that when *m* is 2 said radical contains at least two hydrogens; R_3 and R_4 are independently selected hydrogen or methyl, or R_3 and R_4 are both methoxymethyl or acetoxymethyl; X is hydrogen, chlorine, $-NO_2$ or methoxy; and Z is hydroxyl,



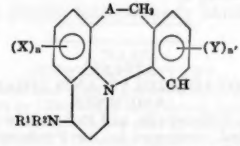
wherein R′ is alkyl having 1 to 3 carbon atoms, or $-OSi(R'')_3$ wherein R″ is methyl or ethyl. These compounds are useful as analgetics or intermediates for the preparation of analgetics.

3,784,548
3-PIPERAZINYL-QUINOBENZOXA(OR THIA) ZEPINE DERIVATIVES

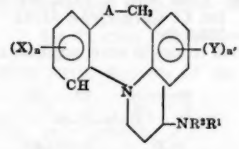
Harry L. Yale, New Brunswick, and Ramesh Petigara, Somerset, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed June 24, 1971, Ser. No. 156,557
Int. Cl. C07d *39/00*
U.S. Cl. 260—268 PC **11 Claims**

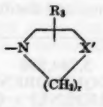
2,3-dihydroquinobenzoxa(or thia)zepine derivatives are provided having the structures



or



wherein A is O or S; X and Y are the same or different and can be halogen, trifluoromethyl, lower alkyl, cycloalkyl, lower alkylmercapto, lower alkyloxy, cyano, isocyanido or di-lower alkyl-sulfamoyl; R^1 and R^2 taken together with the nitrogen to which they are attached may form a heterocyclic group having the formula



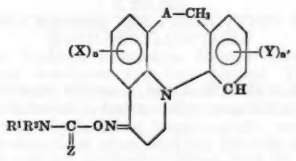
in which X′ represents NR^4, O, S or CH_2, *r* represents 1, 2 or 3; R^4 represents hydrogen, lower alkyl, hydroxy-lower alkyl, lower alkanoyloxy-lower alkyl, hydroxy-lower alkoxy-lower alkyl; di(lower alkyl)amino-lower alkoxy-lower alkyl, lower-alkylamino-lower alkyl, di-lower alkyl amino-lower alkyl, amino-lower alkyl; and R^3 represents any of the R^4 groups; *n* is 0, 1 or 2; and *n′* is 0, 1 or 2. These compounds are useful as central nervous system stimulants, muscle relaxants, anti-inflammatory agents, and antibacterial agents.

3,784,549
N-[2,3 - DIHYDROQUINOBENZOXAZEPIN - 3-YLIDENE]-O-(SUBSTITUTED CARBAMOYL) HYDROXYLAMINES

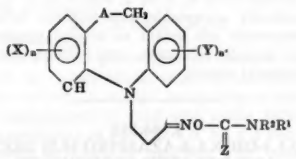
Harry L. Yale, New Brunswick, and Ramesh B. Petigara, Somerset, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Aug. 13, 1971, Ser. No. 171,730
Int. Cl. C07d *39/00*
U.S. Cl. 260—287 R **9 Claims**

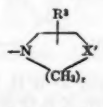
1,2-dihydroquinobenzoxa (or thia)zepine derivatives are provided having the structures



or



wherein A is O or S; Z is O or S; X and Y are the same or different and can be halogen, trifluoromethyl, lower alkyl, cycloalkyl, lower alkyl-mercapto, lower alkoxy, cyano, isocyanido, or di-lower alkysulfamoyl; R^1 and R^2 can be the same or different and are hydrogen, lower alkyl, aralkyl, aryl, arylsulfonyl or alkenyl; or R^1 and R^2 taken together with the nitrogen to which they are attached can be a heterocyclic radical having the formula



in which X′ represents NR^4, O, S or CH_2, *r* represents 1, 2 or 3; R^4 represents hydrogen, lower alkyl, hydroxy-lower alkyl, lower alkanoyloxy-lower alkyl, hydroxy-lower alkoxy-lower alkyl, di(lower alkyl)amino-lower alkoxy-lower alkyl, lower-alkylamino-lower alkyl, di-lower alkyl amino-lower alkyl, amino-lower alkyl; R^3 represents any of the

R^4 groups; n is 0, 1 or 2; n' is 0, 1, or 2, and pharmaceutically acceptable salts thereof. These compounds are useful as central nervous system stimulants, muscle relaxants, anti-inflammatory agents, and antibacterial agents.

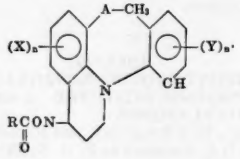
3,784,550

N-[2,3 - DIHYDROQUINOBENZOXA(OR THIA) ZEPIN - 3 - YLIDENE] - O-(SUBSTITUTED BENZOYL)HYDROXYLAMINES

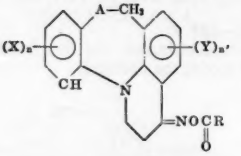
Harry L. Yale, New Brunswick, and Ramesh B. Petigara, Somerset, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Aug. 13, 1971, Ser. No. 171,731
Int. Cl. C07d *39/00*
U.S. Cl. 260—287 R **8 Claims**

Esters of 1,2-dihydroquinobenzoxa(or thia)zepin-3-one, oximes are provided having the structures



or



wherein A is O or S; X and Y are the same or different and can be halogen, trifluoromethyl, lower alkyl, cycloalkyl, lower alkylmercapto, lower alkyloxy, cyano, isocyanido or di-lower alkylsulfamoyl; R is lower alkyl, aryl, arylalkyl, arylalkenyl, aminoaryl, aminoalkyl, piperidyl, furyl or pyridyl; n is 0, 1, or 2; and n' is 0, 1, or 2; and pharmaceutically acceptable acid-addition salts thereof. These compounds are useful as central nervous system stimulants, muscle relaxants, anti-inflammatory agents, and antibacterial agents.

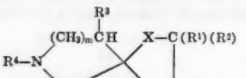
3,784,551

2-OXO-1,4-DIOXA-8-AZASPIRO (4.5) DECANES AND RELATED COMPOUNDS

Michio Nakanishi, Oita, Katsuo Arimura, Yoshitomi, and Hideki Ao, Oita, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

No Drawing. Filed July 8, 1971, Ser. No. 160,937
Int. Cl. C07d *99/04, 99/06*
U.S. Cl. 260—293.66 **11 Claims**

Spiro compounds of the formula



wherein each of R^1 and R^2 is H, CH_3 C_2H_5, phenyl, p-chlorophenyl or benzyl; X is O or S; R^3 is H and R^4 is H, alkyl of 1 to 4 carbon atoms, methoxycarbonyl, ethoxycarbonyl, acetyl, benzoyl, benzyl, phenethyl, pyridylmethyl, pyridylethyl, furfuryl, thenyl, cinnamyl, cinnamoyl, allyl or propargyl, and m plus n is 2 or 3 (m being 0 or 1 and n being 2 or 3); or R^3 and R^4 combinedly represent $—CH_2—CH_2—$, m is 2 and n is 1, and pharmaceutically acceptable acid addition and quaternary ammonium salts thereof are useful as acetylchlorine antagonistic agents and gastric juice secretion inhibiting agents.

3,784,552

METHOD FOR OBTAINING HIGH PURITY 2,3,5,6 - TETRACHLORO-4-(METHYLSULFONYL) PYRIDINE

Demetrios Kyriacou, Clayton, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed July 26, 1972, Ser. No. 275,269
Int. Cl. C07d *31/48*
U.S. Cl. 260—294.8 F **7 Claims**

The present disclosure is directed to a method for separating 2,3,5,6-tetrachloro-4-(methylsulfonyl)pyridine from admixture with closely related chlorine and sulfur substituted pyridines. The separation is carried out by contacting a mixture of the above pyridine compounds with sulfuric acid to precipitate the 2,3,5,6-tetrachloro-4-(methylsulfonyl)pyridine product, and recovering said product from the acid medium.

3,784,553

PYRIDOXINE ALPHA-KETOGLUTARATE AND ITS DERIVATIVES

Cristobal Martinez Roldan and Dario Rodrigues Devesa, Madrid, Spain, assignors to Laboratories Made, S.A., Madrid, Spain

No Drawing. Continuation of abandoned application Ser. No. 878,959, Nov. 21, 1969. This application Jan. 17, 1972, Ser. No. 218,614
Int. Cl. C07d *31/32*
U.S. Cl. 260—297.5 **2 Claims**

Pyridoxine alpha-ketoglutarate is prepared by reacting pyridoxine with alpha ketoglutaric acid or functional derivative thereof, in an organic or inorganic solvent. The compound is useful for improving neuronal metabolism, treating tremors, convulsions and nervous problems and alcoholism. It possesses an anabolic activity and affects fatty acid metabolish. It also is an anti-anemia agent and is useful for treating skin diseases.

3,784,554

PESTICIDAL PHOSPHORYLATED THIAZOLE DERIVATIVES

Michael D. Barker, Maidstone, England, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Feb. 24, 1972, Ser. No. 229,152
Claims priority, application Great Britain, Mar. 12, 1971, 6,684/71
Int. Cl. C07d *91/32*
U.S. Cl. 260—302 E **3 Claims**

Novel pesticidal phosphorylated thiazole derivatives.

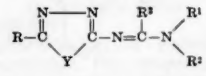
3,784,555

CERTAIN OXADIAZOLYL AND THIADIAZOLYL AMIDINES

Tony Cebalo, Indianapolis, and Robert Edward Buntrock, Munster, Ind., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

No Drawing. Filed Nov. 5, 1970, Ser. No. 87,298
Int. Cl. C07d *85/54, 91/62*
U.S. Cl. 260—306.8 D **10 Claims**

This invention relates to novel amidines of the general formula:



wherein R, R^1, R^2, R^3 and Y are as hereinafter defined. Methods for using these compounds as agricultural chemicals, and formulations for pre- and post-emergent herbicidal applications are also disclosed.

3,784,556
CERTAIN 2-AMINO-6-PHENYL-4H-s-TRIAZOLO [1,5-a][1,4]BENZODIAZEPINES

André Gagneux, Basel, Roland Heckendorn, Arlesheim, and René Meier, Buus, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed July 19, 1972, Ser. No. 273,072
Claims priority, application Switzerland, July 23, 1971, 10,884/71
Int. Cl. C07d *57/02*
U.S. Cl. 260—308 R 9 Claims

Compounds of the class of 2-amino-6-phenyl-4H-s-triazolo[1,5-a][1,4]benzodiazepines, their 5-oxides and their pharmaceutically acceptable acid addition salts have valuable pharmacological properties, in particular anticonvulsant effectiveness, and are active ingredients for therapeutic preparations. Specific embodiments are 2-amino - 6 - phenyl - 8-chloro-4H-s-triazolo[1,5-a][1,4] benzodiazepine, 2-amino-6-(o-fluorophenyl)-8-chloro-4H-s-triazolo[1,5-a][1,4]benzodiazepine and 2 - amino-6-(o-chlorophenyl) - 8 - chloro - 4H-s-triazolo[1,5-a][1,4] benzodiazepine.

3,784,557
PHOTOTROPIC 2,4,5-TRIPHENYLIMIDAZOLYL RADICALS AND DIMERS THEREOF

Lawrence Anthony Cescon, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 388,010, Aug. 6, 1964, which is a continuation-in-part of application Ser. No. 181,475, Mar. 21, 1962, both now abandoned. This application Mar. 10, 1967, Ser. No. 622,085
Int. Cl. C07d *47/36*
U.S. Cl. 260—309 33 Claims

2,4,5-triphenylimidazolyl radicals and their dimers (2,2',4,4',5,5' - hexaphenyl biimidazoles) having on the phenyl groups from 1 to 10 substituents free from a hydrogen atom capable of reacting with methyl magnesium iodide, one such substituent being in the ortho position on the 2-phenyl group and having a sigma value below 0.7. The 2-phenyl group can contain up to four substituents, while the 4 and 5 phenyl groups can contain up to three substituents each.

The radicals and the dimers are stable and form a photochromic system, finding utility as components in sun shields or shades.

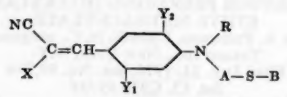
They are prepared by oxidizing the corresponding substituted 2,4,5-triphenylimidazole to form the biimidazole which is dark stable. The radical forms upon exposure of the biimidazole to a light source and is stable in the presence of the light radiation.

3,784,558
STYRYL DYESTUFFS

Richard Peter and Walter Jenny, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation-in-part of abandoned application Ser. No. 662,313, Aug. 22, 1967. This application Oct. 13, 1970, Ser. No. 80,496
Claims priority, application Switzerland, Aug. 29, 1966, 12,485/66
Int. Cl. C07c *121/70*
U.S. Cl. 260—465 D 7 Claims

Water-insoluble styryl dyestuffs of the formula



in which X represents a cyano, carbo-lower alkoxy or phenylsulphone group, Y_1 and Y_2 each represents a hydrogen atom, a lower alkyl or lower alkoxy or phenoxy group, R represents a lower alkyl, phenyl-lower alkyl, cyano-lower alkyl, lower alkoxyalkyl or acyloxyalkyl group or a radical of the formula —A—S—B, and A represents a lower alkylene group that may be substituted by a lower alkanoyloxy or a benzoyloxy group and B represents a phenyl group.

3,784,559
STYRYL DYESTUFFS

Nalin Binduprasad Desai and Ponnusami Jayaraman, Goregaon-Bombay, India, and Visvanathan Ramanathan, Basel, and Klaus Artz, Muttenz, Switzerland, Navnitrai Nagarji Naik, Goregaon-Bombay, India, and Walter Jenny, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 806,291, Mar. 11, 1969, now Patent No. 3,679,657, dated July 25, 1972. This application Dec. 15, 1971, Ser. No. 208,410
Claims priority, application Switzerland, Mar. 18, 1968, 3,958/68
Int. Cl. C07c *121/70*
U.S. Cl. 260—465 D 4 Claims

Styryl dyestuffs containing at least one group of formula

$$-X-CO-NR-SO_2-aryl$$

wherein R is hydrogen, alkyl or cycloalkyl, and X is an oxygen or sulphur atom or a group of formula $—NR_1—$, wherein R_1 is hydrogen, alkyl or cycloalkyl. The dyestuffs dye polyester fibers in fast yellow shades.

3,784,560
PROCESS FOR THE PRODUCTION OF METHACRYLONITRILE

Takachika Yoshino, Yokohama, Shigeru Saito, Fuchu, Masukuni Sobukawa and Isao Nagase, Yokohama, Masao Nikura, Chigasaki, and Jun Ishikura and Yutaka Sasaki, Yokohama, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed May 20, 1971, Ser. No. 145,500
Claims priority, application Japan, May 23, 1970, 45/43,714; Aug. 7, 1970, 45/68,690; Sept. 28, 1970, 45/84,145
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.3 8 Claims

A process for the production of methacrylonitrile in high yields by vapor-phase catalytic ammoxidation of isobutylene utilizing a catalyst comprising as the principle catalytic components at least one oxide selected from the group consisting of Fe, Mn, Co, Ni, Cd and Pb oxides together with an oxide of tungsten, and, optionally, at least one oxide of an element selected from the group consisting of P, B, S, Se and Te.

3,784,561
PROCESS FOR CARRYING OUT CHEMICAL REACTIONS IN A FLUIDIZED BED

Mikhail Gavrilovitch Slinko, Siberia, U.S.S.R., assignor of a fractional part interest to UCB Societe Anonyme, Brussels, Belgium

No Drawing. Filed Jan. 10, 1972, Ser. No. 216,774
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.3 9 Claims

A process for carrying out chemical reactions by catalytic fluidization, in a reactor containing heat exchange means and filling elements, in which said filling elements used are windings of rigid wire, the volume of material of which represents 2 to 12% of the volume occupied by the catalyst under working conditions, and in which the speed of displacement of the gaseous constituents through the reactor is from 0.25 to 0.95 times the speed of entrainment of the fluidized particles of the catalyst.

3,784,562

METHYL ACETOACETIC ESTER ENAMINE OF D-2-(1,4-CYCLOHEXADIEN-1-YL)GLYCINE, SODIUM SALT-DIMETHYLFORMAMIDE ADDUCT

Friedrich Dürsch, Hopewell, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed June 21, 1972, Ser. No. 265,078
Int. Cl. C07c *69/74*
U.S. Cl. 260—468 J **5 Claims**

The dimethylformamide adduct of methyl acetoacetic ester enamine of D-2-(1,4-cyclohexadien-1-yl)glycine, sodium salt and its method of preparation are disclosed.

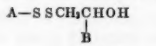
3,784,563

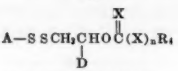
CARBAMIC ACID ESTERS OF POLYHALO DISULFIDE ALCOHOLS

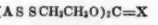
Carl D. Emerson, Kansas City, Mo., and Paul C. Aichenegg, Prairie Village, Kans., assignors to Baychem Corporation, New York, N.Y.

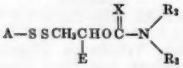
No Drawing. Application Sept. 4, 1968, Ser. No. 757,487, now Patent No. 3,641,109, dated Feb. 8, 1972, which is a continuation-in-part of application Ser. No. 560,125, June 24, 1966. Divided and this application Mar. 27, 1969, Ser. No. 811,191
Int. Cl. C07c *101/12, 101/44*
U.S. Cl. 260—471 C **24 Claims**

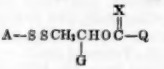
Compounds are prepared having one of the formulae

(1) 

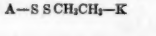
(2) 

(3) 

(4) 

(5) 

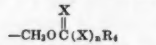
and

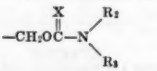
(6) 

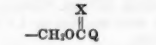
where

A is selected from the group consisting of di to tetrahaloethyl and di to trihalovinyl;

B is selected from the group consisting of hydrogen and $-CH_2OH$;

D is selected from the group consisting of hydrogen and 

E is selected from the group consisting of hydrogen and 

G is selected from the group consisting of hydrogen and 

n is 0 or 1,

X is selected from the group consisting of oxygen and sulfur except that when *n* is 0 in Formula 2, X must be oxygen;

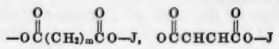
Q is halogen;

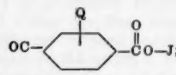
R_1 is selected from the group consisting of alkyl, phenyl, lower alkyl phenyl, halo lower alkyl, halophenyl, naphthyl, lower alkyl naphthyl and lower alkyl halophenyl;

R_2 and R_3 individually are the same as R_1 or hydrogen with the proviso that not more than one of R_2 and R_3 is hydrogen and collectively together with the adjacent nitrogen atom from a 5 to 6 membered heterocyclic ring having up to 1 oxygen atom therein;

R_4 is R_1 or

or phenyl ethylene or halophenoxymethyl having up to 3 halogens and up to 1 methyl group on the aromatic ring;

K is selected from the group consisting of 

and 

J is selected from the group consisting of hydrogen and $ASSCH_2CH_2$—;

m is an integer from 0 to 2 inclusive, and all halogen atoms in the compounds have an atomic weight of 35 to 80.

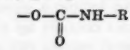
The compounds are useful as herbicides, fungicides, nematocides, defoliants and desiccants. 1,2,2-trichloroethyldithioethyl-2'-methyl-4'-chlorophenoxy acetate is a particularly effective herbicide.

3,784,564

ACETOACETANILIDE SUBSTITUTED BY A PHENYLCARBAMOYLOXY GROUP

Wolfgang Rohr, Mannheim, and Adolf Fischer, Mutterstadt, Germany, assignors to Badische Aniline- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed June 14, 1971, Ser. No. 153,003
Int. Cl. C07c *125/06*
U.S. Cl. 260—472 **5 Claims**

New and valuable substituted acetoacetanilides in which the acetoacetanilide is substituted in the meta-position by a phenylcarbamoyloxy group of the formula 

where R is phenyl or phenyl substituted by chlorine, bromine, iodine, fluorine, methyl, ethyl, chloromethyl, trifluoromethyl, methoxy, ethoxy, allyloxy and propargyloxy. These compounds are useful as herbicides.

3,784,565

STABILIZERS FOR CHLORINE-CONTAINING POLYMERS

Richard G. Parker, Brecksville, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Oct. 29, 1971, Ser. No. 193,998
Int. Cl. C07c *101/28*
U.S. Cl. 260—482 R **4 Claims**

Bis-(β-aminoacrylyl) compounds are prepared in a process comprising first reacting a cyclic hydrocarbon with a cyanoacetylating agent to form an intermediate, and then reacting the intermediate with an alcohol and a hydrogen halide followed by the addition of sodium bicarbonate. The compounds are particularly useful as heat stabilizers for chlorine-containing polymers, especially polyvinyl chloride.

3,784,566

PROCESS FOR PREPARING DIALKYLAMINOETHYL METHACRYLATE

John A. Patterson, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 21, 1970, Ser. No. 99,794
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R **17 Claims**

Methyl methacrylate is reacted under refluxing conditions with a dialkylaminoethanol in the presence of a

catalyst, such as sodium methoxide, and in the presence of an entrainer which, for example, is benzene. The methanol-benzene azeotrope, which is taken off overhead from the reaction zone, is condensed and the resulting liquid composition is passed through a molecular sieve bed for removal of the methanol. The benzene effluent free of methanol, withdrawn from the sieve bed is recycled to the reactor. A product stream removed from the reactor containing the dialkylaminoethyl methacrylate product together with unreacted dialkylaminoethanol, methyl methacrylate, catalyst and inhibitor is sent to a distillation area such as a distillation tower, or series thereof, for recovery of the product and the unreacted starting materials, i.e., the dialkylaminoethanol and the methyl methacrylate, which are recycled to the reaction zone.

3,784,567

METHOD FOR PRODUCING DERIVATIVES OF 6-HYDROXY CAPROIC ACID

Arsene Isard, St. Genis Laval, and Francis Weiss, Pierre-Benite, France, assignors to Ugine Kuhlmann, Paris, France

No Drawing. Filed July 3, 1968, Ser. No. 742,158
Int. Cl. C07c *67/00*; C07d *9/00*
U.S. Cl. 260—488 F **10 Claims**

ε-Caprolactone and ε-formyloxycaproic acid are produced by contacting the peroxides of cyclohexanone, particularly the dimer or the trimer thereof, in a non-polar solvent with a solution of concentrated formic acid having therein a small amount of a mineral acid, such as sulfuric acid, hydrochloric acid or phosphoric acid, or a strong organic acid such as methanesulfonic acid, ethanesulfonic acid or p-toluenesulfonic acid, at a temperature in the range between 0° and 40° C. and for a period sufficient for the transformation of the peroxides into the derivatives of 6-hydroxy caproic acids.

3,784,568

PROCESS FOR THE PRODUCTION OF GLYCERINE DIESTERS AND GLYCERINE(II)

Axel Kleemann, Oberursel, Gerd Schreyer, Grossauheim, Otto Weiberg, Neu-Isenburg, and Wolfgang Weigert, Offenbach am Main, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed Aug. 7, 1970, Ser. No. 62,183
Claims priority, application Germany, Aug. 30, 1969, P 19 44 119.1
Int. Cl. C07c *29/02, 67/00*
U.S. Cl. 260—491 **10 Claims**

Glycerine is produced by reacting allyl acetate with peracetic acid in the presence of acetic acid at elevated temperature. The diacetin formed is converted to glycerine by alcoholysis after removal of the unreacted allyl acetate and the acetic acid. Higher peraliphatic acids can be used in a similar manner.

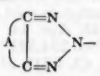
3,784,569

V-TRIAZOLYL COUMARINS

Rudolf Kirchmayr, Binningen, Hansjörg Heller, Riehen, and Jean Rody, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Feb. 12, 1968, Ser. No. 704,590
Claims priority, application Switzerland, Feb. 16, 1967, 2,319/67
Int. Cl. C09d *99/04*; C09k *1/02*
U.S. Cl. 260—308 A **11 Claims**

3-aryl-7-(v-triazolyl)-coumarins in which the triazolyl moiety is of the formula



and A represents an optionally alkyl-substituted tetramethylene group or an optionally alkyl-substituted o,ω-phenylmethylene or o,ω-phenylethylene group the benzene ring of which may be non-chromogenically substituted, are useful as optical brighteners for a great variety of organic materials, e.g. nylon, polyethylene glycol type polyester, polyamide, cellulosic fiber materials, and the like. A method for optically brightening such organic materials, with the aid of the new compounds, and compositions, especially detergent compositions, containing them as optically brightening ingredients, are also described.

3,784,570

4-CHLOROPYRAZOLYL COMPOUNDS

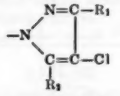
Carl-Wolfgang Schellhammer, Opladen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 18, 1970, Ser. No. 64,828
Claims priority, application Germany, Aug. 23, 1969, P 19 42 926.6
Int. Cl. C07d *49/18, 55/04*
U.S. Cl. 260—308 B **4 Claims**

Optical brighteners on the basis of 4-chloro-pyrazolyl-(1) compounds having the formula:

P—F—Q

in which P stands for a radical which is linked to a carbon atom of the radical F and corresponds to the formula:



in which R_1 and R_2 represent hydrogen, an alkyl radical, a cycloalkyl, aralkyl or aryl radical; F represents the radical of a fluorescent system; Q represents hydrogen or a radical with the same meaning as P linked to a carbon atom of the radical F.

3,784,571

ORGANIC ACID ADDITION SALTS OF 1-(BUTYLCARBAMOYL) - 2-(METHYLAMINO)-BENZIMIDAZOLE AND METHOD FOR PREPARING THE SAME

Dale I. Dodds, 1830 S. 8th St., Alhambra, Calif. 91803

No Drawing. Filed May 15, 1972, Ser. No. 254,771
Int. Cl. C07d *49/38*
U.S. Cl. 260—309.2 **18 Claims**

1 - (butylcarbamoyl) - 2 - (methylamino)-benzimidazolium salts are prepared by heating methyl 1-(butylcarbamoyl) - 2 - benzimidazolecarbamate and an organic acid having from 1 to about 6 carbon atoms, such as lactic acid, in a polar solvent, such as dimethyl sulfoxide, to a temperature between about 175 and 315 degrees F. The benzimidazolium salts are effective in the control of certain plant fungus disease.

3,784,572

PRODUCTION OF DELTA-SULTONES BY ISOMERIZATION OF ALKENESULFONIC ACIDS

Delmar D. Krehbiel and Claude D. Butler, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed May 3, 1971, Ser. No. 139,909
Int. Cl. C07d *89/06, 89/12*
U.S. Cl. 260—327 S **3 Claims**

Delta-sultones are produced by heat promoted isomerization of alkenesulfonic acids.

3,784,573

CATALYSIS OF TRANS-ACIDOLYSIS REACTION

Ellis K. Fields, River Forest, and Imre Puskas, Chicago, Ill., assignors to Standard Oil Company, Chicago, Ill.

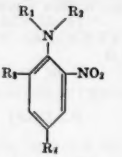
No Drawing. Filed Aug. 13, 1970, Ser. No. 63,622
Int. Cl. C07c *69/76*
U.S. Cl. 260—346.3 **6 Claims**

This invention is directed to a trans-acidolysis reaction wherein a lower alkanoic ester of an alcohol is reacted

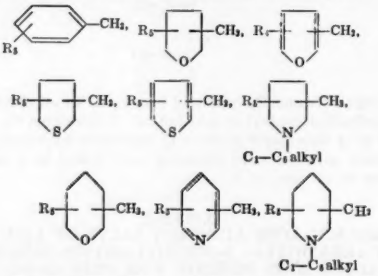
with trimellitic anhydride in the presence of an effective amount of a tertiary amine having a pK_b not exceeding 10.

3,784,574
HERBICIDAL N-FURFURYL SUBSTITUTED 2,6-DINITROANILINES
Lester L. Maravetz, Westfield, N.J., assignor to Esso Research and Engineering Company
No Drawing. Original application Feb. 24, 1970, Ser. No. 18,407, now Patent No. 3,686,230. Divided and this application June 26, 1972, Ser. No. 268,220
Int. Cl. C07d *5/30*
U.S. Cl. 260—347.7 **2 Claims**

The compounds of the subject invention are represented by the following generic formula



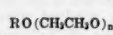
wherein R_1 is selected from the group consisting of



wherein R_5 is H; C_1–C_6 alkyl, alkenyl, haloalkyl, halogen, NO_2; R_2 is hydrogen, C_1–C_6 straight or branched chain alkyl, alkenyl, or alkynyl, C_3–C_8 cycloalkyl, C_4–C_{10} cycloalkylalkyl, C_1–C_6 alkoxyalkyl, C_1–C_6 hydroxyalkyl, C_1–C_6 haloalkyl, C_1–C_6 cyanoalkyl, C_2–C_6 acylalkyl, C_1–C_6 alkylmercaptoalkyl, and related sulfoxide and sulfone analogs; R_3 is H, NO_2 halogen, C_1–C_6 alkyl; and R_4 is H, C_1–C_6 alkyl, haloalkyl, cycloalkyl, halogen, CF_3, NO_2, $C{\equiv}N$, $CH_3S(O)_x$, $C_2H_5S(O)_x$, $C_3H_7S(O)_x$, wherein x is 0, 1 or 2, $SO_2NR_6R_7$ wherein R_6 and R_7 can be the same as R_2 or R_8 and R_7 when taken together with the nitrogen atom to which they are attached form a pyrrolidino, piperidino, aziridino, or morpholino ring.

3,784,575
OXIDATION OF PHENOLS
Thomas F. Rutledge, Wilmington, Del., assignor to ICI America Inc., Wilmington, Del.
No Drawing. Continuation-in-part of abandoned application Ser. No. 879,540, Nov. 24, 1969. This application May 5, 1972, Ser. No. 250,573
Int. Cl. C07c *43/20, 49/64*
U.S. Cl. 260—396 R **14 Claims**

An improved process for the oxidation of mono and dialkyl phenols which comprises the coupling of the phenol in the presence of an oxygen containing gas and a catalyst selected from the group consisting of manganous acetylacetonate, manganous salicyclideneimine, cerium acetylacetonate and other chelates of manganous and cerous ions. The process is solvent specific and has been found to yield the best results in a solvent which is a saturated aliphatic monohydric alcohol containing from 2 to 10 carbon atoms, a saturated aliphatic ketone containing from 4 to 12 carbon atoms, an ester of a saturated aliphatic monohydric alcohol containing from 4 to 10 carbon atoms and acetic, propionic, or butyric acid, ethylene glycol diacetate, diethylene glycol diacetate, triethylene glycol diacetate, and ether-esters characterized by the formula



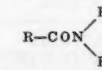
wherein n is 1, 2, or 3 and R is an alkyl group containing from 1 to 4 carbon atoms.

3,784,576
HALOGENATED CHOLESTEROL
Raymond E. Counsell, Ann Arbor, Mich., assignor to The Regents of the University of Michigan, Ann Arbor, Mich.
No Drawing. Filed Sept. 24, 1970, Ser. No. 75,269
Int. Cl. C07c *169/58*
U.S. Cl. 260—397.2 **3 Claims**

Disclosed herein is a halogenated cholesterol which can be utilized as an intermediate to prepare radioactive pharmaceuticals and to increase the fat content in animals.

3,784,577
FATTY ACID AMIDE DERIVATIVES
Toshitsugu Fukumaru, Kyoto, Noritaka Hamma, Nishinomiya, Hiroshi Nakatani, Toyonaka, and Hideaki Fukushima and Katsuyuki Toki, Nishinomiya, Japan, assignors to Sumitomo Chemical Company, Limited, Higashi-ku, Osaka, Japan
No Drawing. Continuation-in-part of abandoned application Ser. No. 671,228, Sept. 28, 1967. This application Oct. 26, 1971, Ser. No. 192,338
Int. Cl. A61k *27/00*
U.S. Cl. 260—404 **3 Claims**

N-substituted fatty acid amides of the formula,



wherein R is a C_{13}–C_{25} aliphatic hydrocarbon chain or a C_{13}–C_{25} hydroxylated aliphatic hydrocarbon chain; R′ is racemic-, d- or l-α-benzylbenzyl; R″ is hydrogen, which are useful for cholesterol lowering agents, may be prepared by any of methods which produce carboxylic acid amides.

3,784,578
PROCESS FOR THE PRODUCTION OF ALLYL ESTERS
Wolfgang Swodenk, Odenthal-Globusch, and Gerhard Scharfe and Johann Grolig, Leverkusen, all % Farbenfabriken Bayer AG, Leverkusen, Germany
No Drawing. Filed June 26, 1970, Ser. No. 50,342
Int. Cl. C07c *67/02*
U.S. Cl. 260—410.9 N **14 Claims**

Allyl esters of carboxylic acids are prepared in high purity and yield in short reaction times by reacting allyl acetate with the methyl or ethyl ester of the carboxylic acid in the contacting presence of a Group I, II or III metal alkoxide.

3,784,579
DRILLING FLUID AGENT AND METHOD OF MAKING SAME
Raymond E. McGlothlin, Eugene R. Werlein, and Bruce E. Taylor, Houston, and Roger Lee Schultz, Tom Ball, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.
No Drawing. Continuation-in-part of abandoned application Ser. No. 816,040, Apr. 14, 1969. This application Mar. 13, 1972, Ser. No. 234,381
Int. Cl. E21b *21/04*
U.S. Cl. 260—414 **12 Claims**

A fluid-loss reduction agent for drilling fluids and a method for making same by reacting fatty acids, titanium

compounds, and soap producing metals or metal oxide compounds.

3,784,580

ORGANOSULFONYLMETHYL(TRIHYDROCARBYL)TIN COMPOUNDS

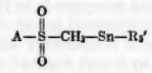
Donald J. Peterson, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 10,303, Feb. 10, 1970. This application July 21, 1971, Ser. No. 164,941

Int. Cl. C07f 7/22

U.S. Cl. 260—429.7 **11 Claims**

Disclosed are novel organotin compounds and a process for preparing same. These organotin compounds correspond to the general formula:



where A is alkyl of from 1 to 14 carbon atoms; aryl; substituted aryl; or R_2N—, where each R is alkyl of from 1 to 14 carbon atoms; and each R′ is alkyl of from 1 to 14 carbon atoms; or aryl. The organotin compounds of the invention having insecticidal, acaricidal, bacteriostatic, fungicidal and herbicidal properties are employed in the formulation of pesticidal compositions.

3,784,581

SUBSTITUTED NORBORNENE COMPOUNDS AND THEIR APPLICATIONS IN THERMOPLASTIC POLYMER COMPOSITIONS

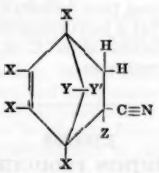
Nicodemus E. Boyer, Parkersburg, W. Va., assignor to Borg-Warner Corporation, Chicago, Ill.

No Drawing. Continuation of abandoned application Ser. No. 824,668, May 14, 1969. This application Apr. 28, 1972, Ser. No. 248,773

Int. Cl. C07c 121/02, 121/48

U.S. Cl. 260—464 **5 Claims**

Novel compositions of matter having the following structural formula:

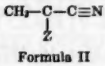


Formula I

wherein each X is selected from the group chlorine, fluorine and bromine: Y and Y′ are each selected from the group consisting of hydrogen, halogen and lower (1–4C) alkyl, alkoxy and halogen-substituted alkyl and alkoxy radicals; and Z is selected from the group consisting of halogen, (1–4C) alkyl, (1–4C) alkoxy, nitrile, thiocyanate, isocyanate, isothiocyanate and phosphono groups of the formula:

wherein R and R′ are each selected from the group consisting of lower (1–4C) alkyl, alkenyl, substituted alkyl, alkoxy, alkenoxy and substituted alkoxy groups.

The compositions of Formula I above are halogen and phosphorus derivatives of cyanonorbornene. These compositions are useful additives in thermoplastic compositions and lend flame retardant characteristics thereto. The compositions may be prepared by reacting equimolar amounts of substituted acrylonitrile of the formula:



Formula II

wherein Z is defined as in Formula I with halogenated cyclopentadiene of the formula:

Formula III

wherein each X is chlorine, fluorine or bromine and Y and Y′ are each selected from the group consisting of hydrogen: halogen, preferably chlorine, bromine or fluorine; lower (1–4C) alkyl, alkoxy and halogen-substituted alkyl and alkoxy radicals.

3,784,582

1-AMIDINO-3-(CYANOPHENYL)UREAS

Leslie Percy Walls, London, England, assignor to Burroughs Wellcome, Research Triangle Park, N.C.

No Drawing. Continuation-in-part of application Ser. No. 650,225, June 30, 1967, now Patent No. 3,539,616. This application June 30, 1970, Ser. No. 51,325

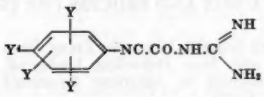
Claims priority, application Great Britain, July 7, 1966, 30,479/66; Dec. 16, 1966, 56,546/66; Feb. 3, 1967, 5,391/67; Apr. 25, 1967, 19,028/67

The portion of the term of the patent subsequent to Nov. 10, 1987, has been disclaimed

Int. Cl. C07c 121/78

U.S. Cl. 260—465 D **8 Claims**

1-amidino - 3 - (substituted-phenyl)urea compounds of the formula



and pharmaceutically acceptable acid addition salts thereof, wherein Y^4 is halogen or cyano and Y is hydrogen, halogen, methyl or cyano; provided that one of the substituents Y^4 and Y's but not both is always cyano, and that not more than three of the substituents Y^4 and the Y's is a substituent other than hydrogen; and provided that not more than one of the substituents Y^4 and the Y's is methyl.

3,784,583

LATENT ORGANIC PHOSPHONIUM SALT CATALYSTS FOR CURING GLYCIDYL ETHER EPOXY RESINS

James D. B. Smith, Turtle Creek, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 14, 1971, Ser. No. 189,323

Int. Cl. C08g 45/06

U.S. Cl. 260—830 TW **4 Claims**

A resinous composition, suitable for insulating electrical members, is made from a mixture containing about

90 to 120 parts of a glycidyl ether epoxy resin, about 130 to 165 parts of an acid anhydride and about 0.02 to 0.70 part of a quaternary organic phosphonium salt acting as a latent catalyst.

3,784,584

METHYLOLGLYCIDYL ETHERS

Alfred Renner, Munchenstein, and Wolfgang Seiz, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Mar. 16, 1972, Ser. No. 235,386

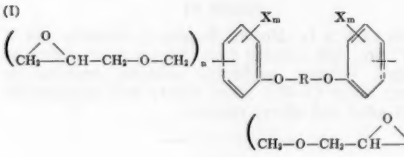
Claims priority, application Switzerland, Mar. 26, 1971, 4,515/71

Int. Cl. C08g *45/06*

U.S. Cl. 260—830 TW **10 Claims**

New polyglycidyl ethers of Formula I:

(I)



wherein R represents an alkylene or alkenylene group having a maximum mass of 2000 atomic weight units, and which can be interrupted by benzene nuclei and oxygen atoms, as well as carry halogen- or oxygen-containing substituents, X stands for an alkyl group having at most 12 carbon atoms, chlorine or bromine, *m* stands for 0, 1 or 2, and *n* stands for 1, 2 or 3, and their preparation are described. They can be cured with epoxide curing agents, and are used for the production of coatings, or as lacquer-, casting-, dipping- and impregnating-resins.

3,784,585

WATER-DEGRADABLE RESINS CONTAINING RECURRING, CONTIGUOUS, POLYMERIZED GLYCOLIDE UNITS AND PROCESS FOR PREPARING SAME

Edward Emil Schmitt, Norwalk, Tzeng Jiueq Suen, New Canaan, and Ivor Heberling Updegraff, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Oct. 21, 1971, Ser. No. 191,465

Int. Cl. C08f *21/02*

U.S. Cl. 260—861 **9 Claims**

This invention provides water-degradable or hydrolyzable thermoplastic or thermoset resins containing blocks of polyglycolic acid units and to a process for preparing the same. More particularly, the invention provides a process relating to the copolymerization of either a resinous prepolymer or a polymerizable monomer with glycolide to produce a plurality of contiguous glycolic acid units which renders the resultant polymer containing such polyglycolic acid units water-degradable. Still more particularly, the invention provides a thermoplastic or resinous polymeric material manufactured by introducing of from about 2% to about 35%, by weight, of glycolide into either a polymerizable monomer or resinous prepolymer and effecting block copolymerization so as to obtain a water-degradable polymeric material. Resultant resin containing recurring, contiguous, polymerized glycolide units finds utility as a disposable packaging material or as a slow release encapsulating material for insecticides and medicinals, thickening agents, and surfactants for food packaging.

3,784,586

COPOLYMERIZABLE COMPOSITION OF OLIGOESTERS HAVING MALEIC ACID END GROUPS AND VINYL MONOMERS

Philippe Thomas, Boulogne, Seine, and Jacques Meyer, Paris, France, assignors to Pechiney-Saint-Gobain, Neuilly-sur-Seine, France

No Drawing. Filed Oct. 26, 1970, Ser. No. 84,194

Claims priority, application France, Oct. 30, 1969, 6937328

Int. Cl. C08f *21/00*

U.S. Cl. 260—861 **19 Claims**

A process for preparation of copolymerizable compositions comprising reacting maleic anhydride with one or more polyhydroxylated compounds in the ratio of 1 mole maleic anhydride per hydroxyl group of the polyhydroxylated compounds at a temperature within the range of 50–100° C. until a hydroxyl number of 20 or below is reached and thereafter adding at a temperature within the range of room temperature to 100° C. of at least one cross-linking vinyl monomer in the presence of a polymerization inhibitor.

3,784,587

ADHESIVE COMPOSITION CONTAINING AN A–B–A BLOCK COPOLYMER, POLY ALPHA-METHYL STYRENE AND A TACKIFYING RESIN

Thomas G. Chambers, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed July 31, 1972, Ser. No. 276,805

Int. Cl. C08f *19/08*

U.S. Cl. 260—876 B **8 Claims**

A pressure-sensitive adhesive composition suitable for application as a hot melt, without a solvent, which comprises a mixture of (a) an unvulcanized elastomeric block copolymer having the general configuration A—B—A, where A is a non-elastomeric styrene polymer block and B is an elastomeric diene polymer block selected from isoprene and 1,3-butadiene, (b) a compatible thermoplastic tackifying resin containing carbon-to-carbon unsaturation and derived from hydrocarbons having 5 to 8 carbon atoms and (c) a poly(α-methylstyrene) characteristically having a viscosity at 60° C. in the range of about 100 to about 900 centipoises.

3,784,588

ACRYLATE ADDITION PRODUCTS OF DIALKYL PHOSPHORODITHIOIC ACIDS

Peter Miles, Moston, England, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Jan. 19, 1971, Ser. No. 107,827

Claims priority, application Great Britain, Jan. 29, 1970, 4,296/70

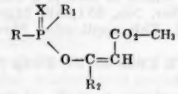
Int. Cl. C07f *9/16*; C10m *1/78*

U.S. Cl. 260—928 **13 Claims**

Esters of S-alkylcarboxylic derivatives of O,O-dihydrocarbyl phosphorodithioic acids are used as antioxidants and extreme pressure additives for lubricants. The esters are prepared by reacting an O,O-dihydrocarbyl phosphorodithioic acid with an acrylate.

3,784,589
2-CARBOMETHOXY-1-METHYLVINYL ETHYL PHOSPHONOTHIOATES
George B. Large, Pinole, Calif., assignor to Stauffer Chemical Company, New York, N.Y.
No Drawing. Filed Sept. 21, 1970, Ser. No. 74,136
Int. Cl. A01n *9/36;* **C07f** *9/40*
U.S. Cl. 260—941 **9 Claims**

New compounds corresponding to the formula



wherein X can be sulfur or oxygen; R can be selected from a group consisting of alkyl, haloalkyl, alkoxy, thioalkyl and aryl; R_1 can be selected from a group consisting of thioalkyl, aminoalkyl, thioalkylnitrile, thioalkyl acetate, thioalkyl acetamide, thioalkynyl, amine, thioaryl, nitroaryl, halogenated thioaryl, thioalkylaryl, amino oxazolidine, keto oxime, aminoaryl, aminocycloalkyl, aminoalkylaryl, amino furfuryl, cycloalkylamine alkoxy, and alkenyloxy; and R_2 can be selected from a group consisting or aryl and alkyl. The compositions described herein are useful as insecticides and miticides.

3,784,590
HYDROXY AND IMINO CONTAINING PHOSPHONIC ACID DIESTERS
Raymond A. Firestone, Fanwood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.
No Drawing. Original application Jan. 2, 1969, Ser. No. 789,060, now Patent No. 3,637,763. Divided and this application Apr. 13, 1971, Ser. No. 133,730
Int. Cl. A01n *9/36;* **C07f** *9/48*
U.S. Cl. 260—944 **5 Claim**

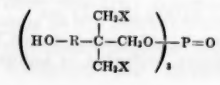
This invention relates to [1-hydroxy-2-methyl-3-(substituted-imino)pentyl]phosphonic acid diesters and [1-(1-hydroxyethyl)-2-(substituted-imino)]phosphonic acid diesters which have utility as intermediates in the preparation of (cis-1,2-epoxypropyl)-phosphonic acid. The acid product thus obtained and its salts are antimicrobial agents which are useful in inhibiting the growth of gram-positive and gram-negative pathogenic bacteria.

3,784,591
BIS(α,β-DIHALOALKYL) 1-ACYLOXYALKANE PHOSPHONATES
Arthur D. F. Toy, Stamford, Conn., and Eugene A. Uhing, Ridgewood, N.J., assignors to Stauffer Chemical Company, New York, N.Y.
No Drawing. Filed June 10, 1971, Ser. No. 151,953
Int. Cl. C07f *9/40;* **C08f** *45/58*
U.S. Cl. 260—952 **7 Claims**

The new compounds, bis(α,β-dihaloalkyl) 1-acyloxyalkane-phosphonates, and particularly bis(2,3 dihalopropyl) 1-acyloxyalkanephosphonates are disclosed which have been found to be effective flame retardants in various polymer compositions such as polymethyl methacrylate and polystyrene.

3,784,592
HALOGENATED POLYHYDROXY-CONTAINING PHOSPHATE ESTERS
Lewis R. Leonard, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.
No Drawing. Filed Feb. 25, 1971, Ser. No. 118,936
Int. Cl. C07f *9/08;* **C08g** *22/44*
U.S. Cl. 260—953 **3 Claims**

There is disclosed certain esters of phosphoric acid represented by the formula:



wherein R is a linear aliphatic hydrocarbon radical having 1–20 carbon atoms and wherein X is bromine or chlorine, preferably bromine. The use of such esters as reactive fire retardant agents for polymeric systems, especially urethane foams, is suggested; as is their use for other purposes such as light stabilizers for such systems.

3,784,593
PROCESS FOR CLASS IV–B METALS ORE REDUCTION (IMPROVEMENT)
Paul Franklin Taylor, P.O. Box 468, Crossville, Tenn. 38555
No Drawing. Continuation-in-part of application Ser. No. 117,098, Feb. 19, 1971. This application Mar. 22, 1972, Ser. No. 236,961
Int. Cl. C22b *53/00, 61/02*
U.S. Cl. 75—84 **12 Claims**

Ores containing oxides of titanium, zirconium, and hafnium are reduced by mixing them with a solution containing primarily phosphoric acid as well as zinc oxide and a sulfated surfactant. Calcium carbonate is added to the solution and it is brought to a boil, allowing the volatile materials to vaporize to form a syrupy mixture. Optionally, sodium bicarbonate and water are added and the resultant mixture is decanted. The resulting material is leached and dried. The residue is immersed in molten sodium hydroxide, diluted with water, rinsed, re-dried, and smelted to yield the pure metal.

3,784,594
CELLULAR MATERIAL PRODUCED FROM CO-POLYMERS OF CYCLIC VINYL ETHERS AND CYCLIC ACETALS
Anthony Joseph Papa, St. Albans, and William Robert Proops, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed May 25, 1971, Ser. No. 146,843
Int. Cl. C08g *53/08*
U.S. Cl. 260—2.5 AM **24 Claims**

Novel copolymerization products are provided by the cationic polymerization of a di-(dihydropyranyl) compound with a substituted 1,3-dioxolane or a substituted 1,3-dioxane. The copolymerization products possess improved abrasion resistance and toughness as compared with the homopolymers of the di-(dihydropyranyl) monomers. Especially useful, particularly in providing foamed polymeric materials of improved friability resistance, are the polymerization reaction products of 3,4-dihydro-2H-pyran-2-methyl(3,4 - dihydro-2H-pyran-2-carboxylate) and a bis-dioxolanyl or a bis-dioxanyl carbamate.

3,784,595
POLYCARBONATE MOLDING COMPOSITIONS HAVING IMPROVED RELEASE PROPERTIES CONTAINING AN ESTER OF A TRIHYDRIC ALCOHOL AND A C–10 TO C–22 SATURATED ALIPHATIC CARBOXYLIC ACID
Hermann Schirmer, Krefeld, and Günter Peilstöcker, Krefeld-Bockum, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Dec. 23, 1971, Ser. No. 211,641
Claims priority, application Germany, Dec. 28, 1970, P 20 64 095.3
Int. Cl. C08g *51/36*
U.S. Cl. 260—18 TN **10 Claims**

Polycarbonate molding compositions are provided which contain from about 0.1 to about 2% by weight based on the weight of the polycarbonate of one or more esters of trihydric alcohols and saturated aliphatic carboxylic acids containing from ten to twenty-two carbon atoms.

3,784,596

NON-AQUEOUS PAPER COATING COMPOSITIONS

Robert T. Nagler, Prairie du Sac, Wis., assignor to Bergstrom Paper Company

No Drawing. Filed Nov. 24, 1971, Ser. No. 202,000

Int. Cl. C08g *51/04*

U.S. Cl. 260—23 R **16 Claims**

Paper coating pigment is combined with polymeric binder, organic solvent and rheological modifier to form a uniform, high-solids, water free coating composition of controllable rheology which may be applied to paper, film or web material to produce a smooth coated product with superior properties.

3,784,597

PROCESS FOR PRODUCING A PARTIALLY HYDROLYZED ACRYLAMIDE POLYMER

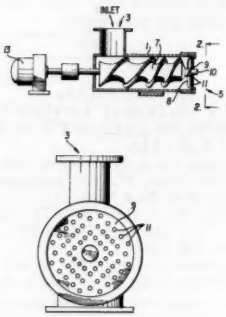
Takehiko Fujimoto, Masashi Okada, and Shigeo Inoue, Kyoto, Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed Dec. 16, 1971, Ser. No. 208,875

Claims priority, application Japan, Dec. 19, 1970, 45/114,562

Int. Cl. C08f *3/90, 27/14*

U.S. Cl. 260—80.3 N **8 Claims**



Acrylamide polymers and copolymers are partially hydrolyzed in an extruder from high concentration gel-like aqueous medium.

3,784,598

PROCESS FOR THE CONVERSION OF A 3-HYDROXY-5,6-OXIDO GROUP OF A STEROID INTO A Δ^4-3-OXO GROUP

Percy L. Julian and Arnold Hirsch, Oak Park, Ill., and Ernst Iseli, Basel, Switzerland, assignors to Ciba Corporation, Summit, N.J.

No Drawing. Continuation of abandoned application Ser. No. 818,434, Apr. 22, 1969. This application Jan. 20, 1972, Ser. No. 219,544

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 D **31 Claims**

The present invention is concerned with the conversion of a 3-hydroxy-5,6-oxido group of a steroid, and more especially of a 3-hydroxy-5α,6α-oxido group of a steroid of the pregnane series, into a Δ^4-3-oxo group. A process for a conversion of this kind is of special value for the manufacture of known progestatives such as 17α-hydroxyprogesterone, corticoids such as cortexolone, cortisone, hydrocortisone, triamcinolone, dexamethasone, betamethasone and fluprednylidene and their derivatives, from starting materials of the pregnenolone type which themselves are obtained in good yield and economically from diosgenin.

3,784,599

WATER-SOLUBLE QUATERNARY AMMONIUM PHTHALOCYANINE DYESTUFFS

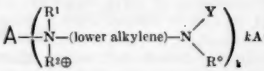
Patrick J. Jefferies, Erlanger, Ky., and Nathan N. Crounse, Cincinnati, Ohio, assignors to Sterling Drug Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 51,676, July 1, 1970, now Patent No. 3,709,903, which is a continuation-in-part of application Ser. No. 777,884, Nov. 21, 1968, which in turn is a continuation-in-part of application Ser. No. 551,868, May 23, 1966, both now abandoned. This application Nov. 22, 1971, Ser. No. 201,153

Int. Cl. C09b *47/04*; D06p *1/14*

U.S. Cl. 260—242 **2 Claims**

Water-soluble cationic dyestuffs of the formula



wherein

R° is hydrogen, lower-alkyl or hydroxy-lower-alkyl;

R^1 is lower-alkyl, lower-alkenyl or hydroxy-lower-alkyl;

R^2 is lower-alkyl, lower-alkenyl, hydroxy-lower-alkyl or -(lower-alkylene)-NR°Y or R^1 or R^2 together with the nitrogen atom, are pyrrolidino, piperidino or 4-lower-alkanoyl piperazino;

Y is hydrogen or

wherein R is hydrogen, lower-alkyl, lower-alkenyl, phenyl or phenyl-lower alkyl;

A is a phthalocyanine dyestuff radical attached to *k* quaternary ammonium nitrogen atoms through the same number of methylene bridges;

k is a small integer whose value has a range from one to five; and

An is an anion;

are particularly useful for coloring natural fibers, synthetic fiber-forming materials and cellulosic materials. These dyes dye cotton and paper various shades of a stable turquoise. The dyeings from these dyes on paper are less prone to bleed and have a high degree of color discharge when bleached with hypochlorite or chlorine bleaches.

3,784,600

4-SUBSTITUTED COUMARINS

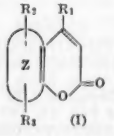
Max von Strandtmann, Rockaway Township, David T. Connor, Parsippany, and John Shavel, Jr., Mendham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Oct. 22, 1971, Ser. No. 191,830

Int. Cl. C07d *7/24*

U.S. Cl. 260—343.2 R **18 Claims**

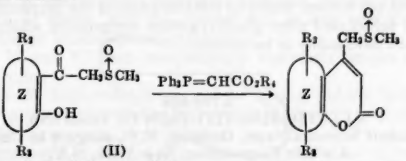
4-substituted coumarins having the following structural formula are disclosed:



(I)

wherein R_1 is (methylsulfinyl)methyl, (methylsulfonyl) methyl, acetyl(methylthio)methyl, dimethoxymethyl, formyl, hydroxymethyl, (arylimino)methyl, (arylamino) methyl or (oximino)methyl; Z is an aromatic or heteroaromatic nucleus; R_2 and R_3 are hydrogen, halogen, alkyl, aralkyl, aryl, alkoxy, acylamino, or hydroxy.

These compounds are prepared by the following reaction scheme:



wherein R_4 is lower alkyl.

The 4 - [(methylsulfinyl)methyl]coumarins are then converted to other 4-substituted coumarins of this invention.

The compounds of this invention are useful as gastric antisecretory agents and are indicated in conditions such as gastric hyperacidity.

3,784,601

PROCESS FOR THE PRODUCTION OF MOLDED ARTICLES OR COATINGS FROM POLYADDUCTS BY REACTION OF POLYETHERS WITH POLYISOCYANATES

Karl Jellinek, Letmathe, Udo Post, Wibmar uber Gieben, and Rudi Oellig, Duisburg-Meiderich, Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt, West Germany

No Drawing. Filed Feb. 17, 1972, Ser. No. 227,256
Claims priority, application Germany, Feb. 17, 1971, P 21 07 441.9
Int. Cl. C08g *22/10, 22/14*
U.S. Cl. 260—77.5 AP 8 Claims

Process for preparing a composition of matter suitable for the production of molded articles or coatings, said process comprising preparing a polyether by reacting an unsubstituted, halogen-substituted or alkyl substituted hexahydrophthalic acid diglycidyl ester with a cycloaliphatic diol in a molar ratio of 1:0.8 to 0.8:1, and mixing the resulting polyether with a polyisocyanate.

3,784,602

ARYLOXY- AND ARYLTHIOALKANOIC ACIDS AND ESTERS AND SALTS THEREOF

Jorg Frei, Binningen, Basel, Charles J. Morel, Arlesheim, Basel, and Oskar Wacker, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Mar. 18, 1971, Ser. No. 125,823
Claims priority, application Switzerland, Mar. 20, 1970, 4,256/70
Int. Cl. C07d *63/18, 5/44*
U.S. Cl. 260—346.2 M 13 Claims

Compounds of the class of substituted 6,7,8,9-tetrahydrodibenzofuranyloxy-, 6,7,8,9 - tetrahydrodibenzothiophenyloxy-, and the corresponding furanylthio- and thiophenylthioacetic acids, lower alkyl esters thereof and alkali and alkaline earth metal salts thereof have hypolipaemic activity; they are active ingredients of pharmaceutical compositions and are useful for treating hyperlipaemic conditions in warm-blooded animals.

3,784,603

6-AZIDO-21-OXYGENATED-STEROIDS OF THE PREGNANE SERIES, METHODS FOR THEIR MANUFACTURE AND INTERMEDIATES PRODUCED THEREBY

Elliot L. Shapiro, Cedar Grove, N.J., George J. Teutsch, Nancy, France, and Hershel L. Herzog, Glen Ridge, N.J., assignors to Schering Corporation, Bloomfield, N.J.

No Drawing. Continuation of abandoned application Ser. No. 59,367, July 29, 1970. This application July 13, 1972, Ser. No. 271,463
Int. Cl. C07c *173/10*
U.S. Cl. 260—349 44 Claims

6-azido-21-oxygenated-4-pregnene-3,20-diones and the 1-dehydro-, 6-dehydro-, and 1,6-bis-dehydro-analogs thereof possess corticoid properties. Preferred are the 6-dehydro analogs, i.e. the 6-azido-21-oxygenated-4,6-pregnadiene-3,20-diones, having enhanced anti-inflammatory activity. Compounds useful as intermediates which also possess glucocorticoid properties are 6β-azido-7α-hydroxy-21-oxygenated-4-pregnene-3,20-diones and the 7α-acylates thereof.

The preferred 6-azido-21-oxygenated-4,6-pregnadiene-3,20-diones are prepared by treating a 6α,7α-oxido-4-pregnene with an alkali metal azide in an aqueous, inert organic solvent; esterifying the thereby formed 6β-azido-7α-hydroxy-4-pregnene; and treating the resulting 6β-azido-7α-acyloxy-4-pregnene with a tetraalkylammonium halide in an aprotic solvent. Alternatively, the 6-azido-4,6-pregnadienes are prepared by treating a 6β-azido-7α-hydroxy-4-pregnene or 7α-acylate thereof with concentrated hydrochloric acid in a lower alkanoic acid in an inert solvent.

The 6α-azido-21-oxygenated-4-pregnene-3,20-diones and 1-dehydro analogs thereof are prepared by treating a 6β-halogeno-(or 6β-sulfonyloxy)-21-oxygenated-4-pregnene-3,20-dione or 1-dehydro-analog thereof with an alkali metal azide in an inert solvent.

The 6-azido-21-oxygenated - 1,4,6 - pregnatriene-3,20-diones are prepared by treating a 6-azido-21-oxygenated-4,6-pregnadiene-3,20-dione with 2,3-dichloro-5,6-dicyanobenzoquinone in the presence of a strong acid and water.

3,784,604

1-p-(ω - AMINOALKOXY)PHENYL - 4,4 - DIARYLCYCLOHEXANES, CYCLOHEXENES AND CYCLOHEXANDIENES AND THE SALTS AND N-OXIDES THEREOF

Mario G. Buzzolini, Morristown, N.J., assignor to Sandoz, Inc., Hanover, N.J.

No Drawing. Filed Mar. 12, 1969, Ser. No. 806,680
Int. Cl. C07c *93/06;* C07d *27/00*
U.S. Cl. 260—570 R 12 Claims

This invention relates to 1-p-(ω-aminoalkoxy)phenyl-4,4-diarylcyclohexanes and cyclohexenes. The cyclohexanes are prepared by catalytic hydrogenation of either the cyclohexenes or cyclohexan-dienes while the cyclohexenes are prepared by dehydration of a corresponding cyclohexan-1-ol and the cyclohexan-dienes are prepared by dehydration of a corresponding 2-cyclohexen-1-ol, a representative compound being 1-[4-(2-diethylaminoethoxy)phenyl]-4,4-diphenyl-cyclohexane hydrochloride. The invention also relates to intermediates and methods useful in the preparation thereof and to pharmaceutical compositions and methods utilizing said compounds.

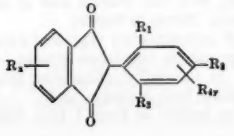
3,784,605

2-(POLYSUBSTITUTED PHENYL)-1,3-INDANDIONE COMPOUNDS

John A. Durden, South Charleston, W. Va., and Anthony A. Sousa, Raleigh, N.C., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 816,024, Apr. 14, 1969. This application May 13, 1971, Ser. No. 143,207
Int. Cl. C07c *49/76*
U.S. Cl. 260—590 2 Claims

A new series of 2-(polysubstituted phenyl)-1,3-indandione compounds have been found to have exceptional miticidal and herbicidal activity. These compounds may be represented by the following general formula:



where R is lower alkyl, lower alkoxy or halogen; x is 0 or a positive integer from 1 to 4, R_1 is lower alkoxy; R_2 and R_3 are lower alkyl; R_4 is lower alkyl or lower alkoxy and y is 0 or a positive integer of of from 1 to 2.

3,784,606

NOVEL 2-ARYL-1,3-INDANDIONES AND 2-ARYL-2,3-DIHYDROBENZ[f]INDENE-1,3-DIONES

Gerald F. Holland, Old Lyme, and Joseph G. Lombardino, Niantic, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Original application Aug. 29, 1968, Ser. No. 756,324, now Patent No. 3,622,632. Divided and this application Jan. 28, 1971, Ser. No. 110,589

Int. Cl. C07c *49/76, 49/82*

U.S. Cl. 260—590 **3 Claims**

Novel 2 - aryl-1,3-indandiones and 2-aryl-2,3-dihydrobenz[f]indene-1,3-diones and their use in lowering the blood lipid level in mammals.

3,784,607

HALOHYDRIN THIOETHERS AND METHOD OF PREPARATION

Richard A. Hickner and Corwin J. Bredeweg, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Oct. 3, 1968, Ser. No. 764,956, now abandoned. Divided and this application Aug. 9, 1971, Ser. No. 170,302

Int. Cl. C07c *149/18*

U.S. Cl. 260—609 R **10 Claims**

Compounds of the structure $R(SCH_2CHOHCH_2X)_n$ when n=1 to 4 and R is a hydrocarbon, ether, ester, acetal, hydroxy aliphatic, hydroxy aromatic, imide or amide group or halogenated derivatives thereof are prepared by reacting 1-halo-3-mercapto-2-propanol with an aliphatically unsaturated compound using free radical initiators as catalysts. The compounds in which R is an unsaturated aliphatic hydrocarbon group of 2 to 24 carbon atoms, or an unsaturated cycloaliphatic group, and those in which the aliphatic or cycloaliphatic group is connected to two or more —S—CH_2CHOHCHCl groups, and compounds where R is an alkylene substituted aromatic group and hydroxy, thioalkyl, alkoxy, aryloxy, ester, carbamidoalkyl and sulfamidoalkyl, halogenated derivatives of said groups are new compounds. The thioether halohydrins can be converted to epoxides. The process utilizing a radioactive energy source as a catalyst is new.

3,784,608

SUBSTITUTED HALOALKOXY- AND HALOALKYL-THIO-PHENOLS AND THIOPHENOLS

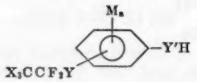
Eric R. Larsen, Midland, Bernard R. Andrejewski, Linwood, and Fred Y. Edamura, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Feb. 1, 1971, Ser. No. 111,683. Divided and this application Oct. 30, 1972, Ser. No. 301,876

Int. Cl. C07c *149/32*

U.S. Cl. 260—609 D **1 Claim**

Novel substituted haloalkoxy- or haloalkylthio-phenol or thiophenol compounds corresponding to the formula:



wherein

each X independently represents hydrogen, bromo, chloro or fluoro, with the proviso that at least one X is always bromo, chloro or fluoro;

Y and Y′ each independently represent oxygen or sulfur;

each M independently represents bromo, chloro, fluoro, iodo, nitro or loweralkyl containing from 1 to about 4 carbon atoms, both inclusive, and

a represents an integer of from 1 to 3, both inclusive.

The novel compounds of the present invention are suitable for use as herbicides, fungicides and insecticides, and are further useful as intermediates in the preparation of substituted ethyl phenoxyacetate compounds, which in turn have utility as herbicides.

3,784,609

ALLYLIC SUBSTITUTION OF OLEFINS

Robert Schwenn Neale, Ossining, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Oct. 19, 1970, Ser. No. 82,172

Int. Cl. C07c *41/06*

U.S. Cl. 260—611 R **7 Claims**

A liquid phase process for the production of allyl ethers comprising admixing an olefin, a nucleophilic solvent (an alcohol), an organic hydroperoxide, and an exchange promoter selected from the group consisting of acids having a pKa value of less than 3 and salts formed from such acids and nitrogen bases having a pKa value greater than 5 in the presence of a catalyst compound containing copper in a +1 or +2 oxidation state, at least 1×10^{-5} mol of said catalyst compound per mol of hydroperoxide being present in the admixture in a solubilized state.

3,784,610

SUBSTITUTED PHENOXY- AND PHENYLTHIO-ALKANOLS AND ALKANETHIOLS

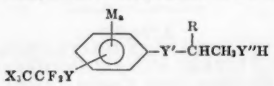
Eric R. Larsen, 314 W. Meadowbrook Drive; Lennon H. McKendry, 205 Hollybrook Drive; and Fred Y. Edamura, 509 Capitol Drive, all of Midland, Mich. 48640

No Drawing. Original application Feb. 1, 1971, Ser. No. 111,685. Divided and this application Oct. 30, 1972, Ser. No. 301,877

Int. Cl. C07c *149/32*

U.S. Cl. 260—609 D **1 Claim**

Novel substituted phenoxy- and phenylthio-alkanol and alkanethiol compounds corresponding to the formula:



wherein

each X independently represents hydrogen, bromo, chloro or fluoro, with the proviso that at least one X is always bromo, chloro or fluoro;

Y, Y′ and Y″ each independently represents oxygen or sulfur;

each M independently represents bromo, chloro, iodo, fluoro, nitro or loweralkyl containing from 1 to about 4 carbon atoms, both inclusive;

a represents an integer of from 0 to 3, both inclusive, and R is hydrogen or loweralkyl containing from 1 to about 4 carbon atoms, both inclusive.

The compounds are suitable for use as herbicides and fungicides.

3,784,611

SUBSTITUTED PHENOXY-ALKANOLS

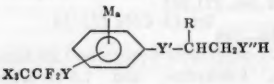
Eric R. Larsen, Lennon H. McKendry, and Fred Y. Edamura, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 1, 1971, Ser. No. 111,685

Int. Cl. C07c *43/22*

U.S. Cl. 260—613 D **7 Claims**

Novel substituted phenoxy- and phenylthio-alkanol and alkanethiol compounds corresponding to the formula:



wherein

each X independently represents hydrogen, bromo, chloro or fluoro, with the proviso that at least one X is always bromo, chloro or fluoro;

Y, Y′ and Y″ each independently represents oxygen or sulfur;

each M independently represents bromo, chloro, iodo, fluoro, nitro or loweralkyl containing from 1 to about 4 carbon atoms, both inclusive;

a represents an integer of from 0 to 3, both inclusive, and

R is hydrogen or loweralkyl containing from 1 to about 4 carbon atoms, both inclusive.

The compounds are suitable for use as herbicides and fungicides.

3,784,612

METHOD FOR THE PREPARATION OF ACETALS AND KETALS OF ALPHA-CHLORINATED ALDEHYDES AND KETONES

Wilhelm Vogt, Cologne-Suelz, and Herman Richtzenhain, Post Marialinden, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, West Germany

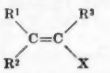
No Drawing. Continuation of abandoned application Ser. No. 774,216, Nov. 7, 1968. This application Aug. 5, 1971, Ser. No. 169,494

Claims priority, application Germany, Nov. 11, 1967, P 16 93 017.9

Int. Cl. C07c *43/30*

U.S. Cl. 260—615 A **20 Claims**

Reaction of halogenated olefins of the formula



wherein X is chlorine, fluorine or bromine; R^1 and R^2 are hydrogen, haloalkyl, alkyl alkoxy alkyl or aryl; R^2 and R^1 are the same or different radicals, and R^2 is haloalkyl or alkoxyalkyl with chlorine in the presence of monohydric alcohols to produce α-chlorinated acetals or ketals.

3,784,613

PREPARATION OF 2,6-DINITRO-4-ALKYLPHENOLS

Eddie Vi Ping Tao, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed June 28, 1971, Ser. No. 157,596

Int. Cl. C07c *79/28*

U.S. Cl. 260—622 P **7 Claims**

4-alkylphenols are converted to 2,6-dinitro-4-alkylphenols via reaction with nitrogen tetroxide. The end products are useful intermediates in the preparation of certain herbicidally active N,N-disubstituted-2,6-dinitro-4-alkylanilines disclosed in United States Pat. 3,257,190 and British Pat. No. 917,253.

3,784,614

PROCESS FOR THE MANUFACTURE OF ALCOHOLS BY THE CATALYTIC HYDRATION DF OLEFINS

Wilhelm Ester and Wilhelm Heitmann, Herne, Germany, assignors to VEBA Chemie Aktiengesellschaft, Gelsenkirchen-Buer, Germany

No Drawing. Continuation of abandoned application Ser. No. 651,945, July 7, 1967. This application Nov. 9, 1970, Ser. No. 78,722

Int. Cl. C07c *29/08, 29/04*

U.S. Cl. 260—641 **17 Claims**

An improved process for the preparation of alcohols by the catalytic hydration of olefins is disclosed. In the process the olefin and water are brought into contact with a catalyst comprising a support material such as bentonite impregnated with phosphoric acid, at a temperature not exceeding 280° C., and employing a water-to-olefin ratio of between about 0.8:1 and 1.1:1.

Under the aforesaid conditions "seepage" occurs, whereby the catalyst is continuously cleaned and accordingly undergoes no decline in activity. The preparation of the alcohols by the instant catalytic hydration of olefins can thus be effected with good results over long periods of operation.

3,784,615

HALOADAMANTANES

Robert E. Moore, Wilmington, Del., assignor to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Original application Dec. 17, 1968, Ser. No. 784,486, now Patent No. 3,666,806. Divided and this application Sept. 20, 1971, Ser. No. 182,170

Int. Cl. C07c *17/00, 17/16*

U.S. Cl. 260—648 R **10 Claims**

Halogenated derivatives containing adamantane nucleus are produced by admixing, in the presence of strong sulfuric acid, adamantane or alkyl-substituted adamantane with a selected halo-yielding salt of an alkali or alkaline earth metal, or a corresponding hydrogen halide.

3,784,616

DECOMPOSITION OF OXALATES TO FORM ALDEHYDES AND ALCOHOLS

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Sept. 16, 1971, Ser. No. 181,274

The portion of the term of the patent subsequent to Sept. 22, 1987, has been disclaimed and dedicated to the Public

Int. Cl. C07c *31/02, 27/00*

U.S. Cl. 260—638 R **6 Claims**

A process for the preparation of aldehydes and alcohols comprising contacting a dihydrocarbyl oxalate with a catalyst comprising a complex of a Group VIII noble metal and a biphyllic ligand at a temperature between 150° C. and 250° C. and at a pressure sufficient to maintain liquid phase reaction conditions. Soluble complexes of zero valent iron are cocatalysts for this reaction. The products produced, chiefly alcohols with some aldehydes, formate esters and ethers are useful as intermediates for a variety of products including plasticizers, acids and resins, etc.

3,784,617

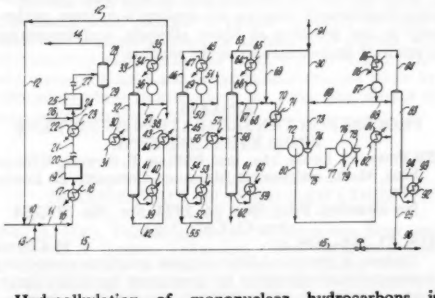
HYDROALKYLATION OF MONONUCLEAR AROMATIC HYDROCARBONS

Robert M. Suggitt, Wappingers Falls, John M. Crone, Jr., Fishkill, and Alfred Arkell, Wappingers Falls, N.Y. (all c/o Texaco Inc., P.O. Box 509, Beacon, N.Y. 12508)

Filed Dec. 6, 1972, Ser. No. 312,441

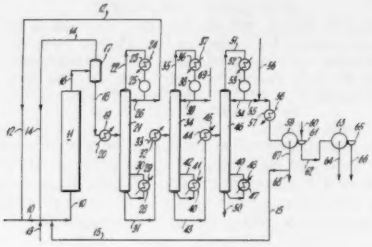
Int. Cl. C07c *5/12*

U.S. Cl. 260—668 R **14 Claims**



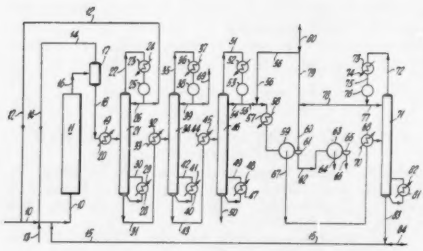
Hydroalkylation of mononuclear hydrocarbons is effected under controlled conditions to yield product hydroalkylate with minimum formation of undesired by-products.

3,784,618
HYDROALKYLATION PROCESS
Robert M. Suggitt, Wappingers Falls, and John M. Crone, Jr., Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.
Filed Aug. 25, 1972, Ser. No. 283,869
Int. Cl. C07c *5/12*
U.S. Cl. 260—668 R **17 Claims**



Increased yield of cyclohexyl benzene may be achieved by hydroalkylating benzene in the presence of dicyclohexyl benzene.

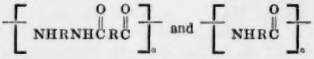
3,784,619
METHOD OF SEPARATING DICYCLOHEXYL BENZENES
John M. Crone, Jr., Fishkill, and Robert M. Suggitt, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.
Filed Aug. 25, 1972, Ser. No. 283,870
Int. Cl. C07c *5/12*
U.S. Cl. 260—668 R **20 Claims**



Para-dicyclohexyl benzene may be separated from non-para-dicyclohexyl benzene by cooling a mixture preferably in the presence of lower alkanols, and separating crystals of para-isomer from the mixture.

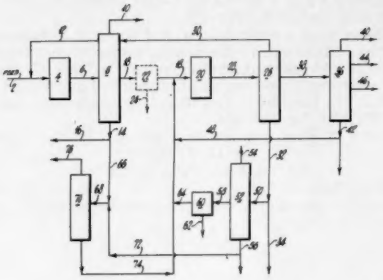
3,784,620
PROCESS FOR THE SEPARATION OF STYRENE FROM ETHYLBENZENE
Eli Perry, St. Louis, Mo., and William F. Strazik, Wilbraham, Mass., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Dec. 14, 1972, Ser. No. 315,254
Int. Cl. C07c *7/02*
U.S. Cl. 260—669 A **10 Claims**

Styrene is separated from organic mixtures comprising styrene and ethylbenzene by contacting the said mixture under pervaporation permeation conditions against one side of a polyamide permeation membrane and withdrawing on the other side of the membrane a vaporous mixture having an increased concentration of styrene. The polyamides have units selected from the group consisting of



wherein R and R′ are aromatic or aliphatic. Exemplary of the polyamides are nylon-6 and nylon 6, 10.

3,784,621
DISPROPORTIONATION OF ALKYLAROMATIC HYDROCARBONS
Robert M. Suggitt, Wappingers Falls, N.Y., assignor to Texaco Development Corporation, New York, N.Y.
Filed Nov. 11, 1971, Ser. No. 197,832
Int. Cl. C07c *3/62*
U.S. Cl. 260—672 T **19 Claims**



A process is provided for the production of methylated aromatic hydrocarbons, and in a particularly preferred embodiment tri- and tetramethylbenzenes, by the steps of disproportionating toluene in a first disproportionation reactor, separating a C_8 aromatic fraction from the products of the first reactor and disproportionating the C_8 fraction in a second disproportionation reactor and separating and recovering tri- and tetramethylbenzene fractions substantially free of ethyl-aromatic derivatives.

3,784,622
SATURATED HYDROCARBON AVERAGING
Thomas R. Hughes, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Continuation-in-part of applications Ser. No. 864,870 and Ser. No. 864,871, both Oct. 8, 1969, both now abandoned, Ser. No. 3,303 and Ser. No. 3,306, both Jan. 16, 1970. This application Sept. 14, 1972, Ser. No. 289,036
Int. Cl. C07c *5/18*
U.S. Cl. 260—676 R **6 Claims**

A process for producing light hydrocarbons and jet fuel boiling range paraffinic hydrocarbons which comprises averaging a raffinate rich in paraffins with another paraffinic feedstock selected from the group consisting of propane or C_4 or C_{10} to C_{30} hydrocarbons or mixtures of the foregoing hydrocarbons, to obtain at least C_5 and $C_{10}+$ hydrocarbons.

3,784,623
INHIBITION OF OLEFIN ISOMERIZATION IN DISPLACEMENT REACTIONS
Kaye L. Motz, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
No Drawing. Filed June 1, 1972, Ser. No. 258,689
Int. Cl. C07c *3/10, 11/00*
U.S. Cl. 260—677 R **7 Claims**

Isomerization of alpha-olefins produced by displacement reaction from aluminum alkyl growth products may

be inhibited by maintaining the displaced alpha-olefins in contact with a C_2–C_3 olefin until after deactivation of the aluminum alkyls.

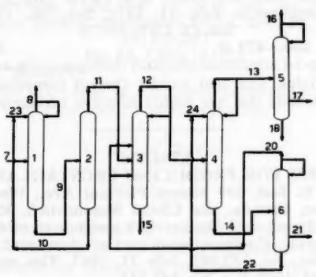
3,784,624
PROCESS FOR THE SEPARATION OF DIENE FROM ORGANIC MIXTURES
Eli Perry, St. Louis, and William F. Strazik, St. Ann, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Sept. 22, 1972, Ser. No. 291,458
Int. Cl. C07c *7/00*
U.S. Cl. 260—681.5 R **16 Claims**

Dienes are separated from organic mixtures comprising diene and alkene having one double bond by contacting the mixture against one side of a polymeric permeation membrane, the membrane having a transition metal molecularly dispersed therein and withdrawing on the other side of the membrane a vaporous mixture having increased diene concentration. Exemplary of the organic mixture is a mixture of butadiene and butene. Exemplary of transition metal is silver as elemental silver and as silver tetrafluoroborate.

3,784,625
PROCESS FOR THE SEPARATION OF DIENE FROM ORGANIC MIXTURES
Eli Perry, St. Louis, and William F. Strazik, St. Ann, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Sept. 22, 1972, Ser. No. 291,459
Int. Cl. C07c *7/00*
U.S. Cl. 260—681.5 R **4 Claims**

Dienes are separated from organic mixtures comprising diene and alkene having one double bond by contacting the mixture against one side of poly(N-vinylpyrrolidone) membrane and withdrawing at the other side a vaporous mixture having increased diene concentration. Exemplary of the organic mixtures is a mixture of butadiene and butene.

3,784,626
PROCESS FOR THE SEPARATION OF CONJUGATED DIOLEFINS FROM MIXTURES CONTAINING THEM
Alessandro Ginnasi and Carlo Rescalli, San Donato Milanese, Italy, assignors to Snam Progetti, S.p.A., San Donato Milanese, Italy
Filed Dec. 29, 1971, Ser. No. 213,485
Claims priority, application Italy, Dec. 29, 1970, 33,614/70
Int. Cl. C07c *7/08*
U.S. Cl. 260—681.5 R **4 Claims**

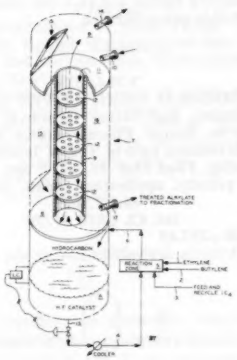


A process is disclosed whereby conjugated diolefins, such as isoprene and butadiene, are separated with high selectivity from mixtures containing them through extraction and/or extractive distillation with the aid of an agent consisting of morpholine and another solvent such as an oxygen containing derivative of morpholine and water, e.g., morpholine-water, morpholine-N-formyl morpholine and morpholine-N-formyl morpholine-water.

3,784,627
CATALYSTS AND PROCESS FOR DEHYDROGENATION
Brent J. Bertus, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Feb. 28, 1972, Ser. No. 230,077
Int. Cl. C07c *3/28*
U.S. Cl. 260—683.3 **9 Claims**

Compositions prepared from (I) a transition metal compound of the iron group, (II) a Group II–A metal-containing compound, and (III) Group VI–A element-containing compound, are effective in a process to convert paraffins or monoolefins to a greater degree of unsaturation.

3,784,628
REMOVING ALKYL FLUORIDE WITH HF ACID FROM AN ALKYLATION HYDROCARBON EFFLUENT
Charles C. Chapman, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed July 6, 1971, Ser. No. 159,884
Int. Cl. C07c *3/50*
U.S. Cl. 260—683.42 **1 Claim**



Method and apparatus are described wherein alkylate containing alkyl fluoride is passed upwardly through a series of contacting zones or members in contact with downflowing high purity HF acid, acid is settled below the contacting zone and returned to alkylation while hydrocarbon phase formed above the contacting zone is recovered substantially free from fluoride.

3,784,629
DIMERIZATION OR CODIMERIZATION OF α-OLEFINS
Neil A. Maly, Tallmadge, Henry R. Menapace, Stow, and Gerald S. Benner, Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Filed Mar. 9, 1972, Ser. No. 233,279
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **7 Claims**

There is disclosed a process for the dimerization or codimerization of α-olefins by means of a catalyst system

comprising (A) an organometallic compound (B) a nitrogen containing ligand and (C) the reaction product of a tungsten halide and a monocarboxylic acid or a semiester of a dicarboxylic acid.

3,784,630
DIMERIZATION OR CODIMERIZATION OF α-OLEFINS

Neil A. Maly, Tallmadge, Henry R. Menapace, Stow, and Gerald S. Benner, Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Mar. 9, 1972, Ser. No. 233,363
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **9 Claims**

There is disclosed a process for the dimerization or codimerization of α-olefins by means of a catalyst system comprising (A) an organometallic compound, (B) a nitrogen-containing ligand and (C) the reaction product of a tungsten halide and a phenolic compound.

3,784,631
DIMERIZATION OR CODIMERIZATION OF α-OLEFINS

Henry R. Menapace, Stow, and Gerald S. Benner and Neil A. Maly, Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Mar. 9, 1972, Ser. No. 233,364
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **7 Claims**

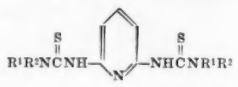
There is disclosed a process for the dimerization or codimerization of α-olefins by means of a catalyst system comprising (A) an organometallic compound, (B) a nitrogen-containing ligand and (C) the reaction product of a tungsten halide and a diketone.

3,784,632
2,6-BIS(THIOUREA) DERIVATIVES OF PYRIDINE

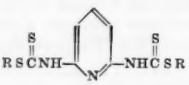
Ikuo Matsumoto and Masao Okazawa, Tokyo, Japan, assignors to Banyu Pharmaceutical Co., Ltd., and Hiroyoshi Hidaka, both of Tokyo, Japan

No Drawing. Filed May 19, 1972, Ser. No. 254,941
Claims priority, application Japan, July 1, 1971, 46/47.700
Int. Cl. C07d *31/50*
U.S. Cl. 260—293.69 **6 Claims**

Pyridyl thiourea derivatives having the formula:



wherein R^1 and R^2, respectively, represent a hydrogen atom, a lower alkyl group or an hydroxyalkyl group or R^1 and R^2 together can form a heterocyclic ring with the nitrogen atom, can be prepared by reacting bis(alkyldithiocarbamate) derivatives having the formula:



wherein R represents a lower alkyl group, with an ammonium hydroxide or amine having the formula:

$$R^1R^2NH$$

wherein R^1 and R^2 are as defined above. Alternatively, the compounds can be prepared by reacting 2,6-di(isothiocyanato)pyridine with a dialkylamine of the formula:

$$R^1R^2NH$$

wherein R^1 and R^2 are as defined above.

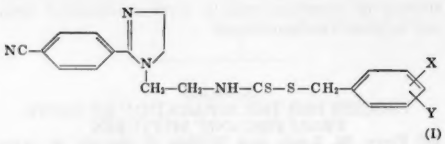
The compounds of this invention may be used as agents having physiological activity toward the circulatory system, or as anti-inflammation agents.

3,784,633
IMIDAZOLINYL-ETHYL-DITHIOCARBAMIC ACID ESTERS

Manfred Schorr, Frankfurt am Main, and Dieter Duwel, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed May 16, 1972, Ser. No. 253,730
Claims priority, application Germany, May 18, 1971, P 21 24 572.7
Int. Cl. C07d *49/34*
U.S. Cl. 260—309.6 **5 Claims**

Imidazolinyl-ethyl-dithiocarbamic acid esters and their physiologically compatible salts are described as well as the process of their manufacture and their anthelmintic action. The novel compounds correspond to Formula I



(I)

in which X and Y stands for hydrogen or halogen.

3,784,634
PROCESS FOR PRODUCING PROSTAGLANDINS

George F. Just, 499 Mount Pleasant Ave., Westmont, Quebec, Canada, and Chaim Simonovitch, Rishon-le-Zion, Israel; said Simonovitch assignor to said Just

No Drawing. Continuation-in-part of abandoned application Ser. No. 657,085, July 31, 1967. This application Dec. 31, 1970, Ser. No. 103,315
Claims priority, application Great Britain, Aug. 9, 1966, 35,550/66; Jan. 24, 1967, 3,588/67
Int. Cl. C07c *61/32, 69/74*
U.S. Cl. 260—468 D **19 Claims**

Prostaglandin $F_{1\alpha}$, prostaglandin $F_{1\beta}$, and analogs of those are produced from bicyclo[3.1.0]hexane intermediates.

3,784,635
SUBSTITUTED PHENOXYBENZOIC ACIDS AND ESTERS THEREOF

Robert J. Theissen, Westfield, N.J., assignor to Mobil Oil Corporation

No Drawing. Continuation-in-part of application Ser. No. 819,412, Apr. 25, 1969, now Patent No. 3,652,645. This application Feb. 11, 1971, Ser. No. 114,712
Int. Cl. C07c *69/78*
U.S. Cl. 260—471 R **6 Claims**

2-nitro-5-(substituted-phenoxy)benzoic acids and esters salts, amides, and acyl halides thereof comprise a class of compounds that are highly effective herbicides.

3,784,636
PROCESS FOR PRODUCING PROSTAGLANDINS

George E. Just, 499 Mount Pleasant Ave., Westmount, Quebec, Canada, and Chaim Simonovitch, Rishon-le-Zion, Israel; said Simonovitch assignor to said Just

No Drawing. Continuation-in-part of abandoned application Ser. No. 657,085, July 31, 1967. This application Dec. 31, 1970, Ser. No. 103,336
Int. Cl. C07c *61/32, 69/74*
U.S. Cl. 260—468 D **18 Claims**

Prostaglandin $F_{1\alpha}$, prostaglandin $F_{1\beta}$, and analogs of those are produced from bicyclo[3.1.0]hexane intermediates.

3,784,637

MULTIFUNCTIONAL POLYMERIZATION INITIATORS FROM VINYLSILANES OR VINYLPHOSPHINES AND ORGANOMONOLITHIUM COMPOUNDS

Ralph C. Farrar, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Original application Jan. 30, 1969, Ser. No. 795,364, now Patent No. 3,624,057, dated Nov. 30, 1971. Divided and this application Sept. 1, 1971, Ser. No. 177,155

Int. Cl. C07f *7/08, 9/50*

U.S. Cl. 260—448.2 Q **9 Claims**

Multifunctional polymerization initiators are prepared by reacting an organomonolithium compound with a polyvinylsilane compound or polyvinylphosphine compound.

3,784,638

PREPARATION OF TERTIARY ORGANOPHOSPHINE OXIDES

Ronald F. Lambert, Melrose, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed Dec. 24, 1969, Ser. No. 888,023

Int. Cl. C07f *9/28, 9/30*

U.S. Cl. 260—526 S **7 Claims**

Organophosphines are converted to their final phosphorus oxidation products by the addition of 1, 2 or 3 atom equivalents of oxygen by treating the primary, secondary or tertiary organophosphine starting material with aqueous alkali.

3,784,639

DISPROPORTIONATION OF ALKALI METAL SALTS OF AROMATIC CARBOXYLIC ACIDS

Donald K. Kuper, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed July 19, 1971, Ser. No. 164,099

The portion of the term of the patent subsequent to Feb. 8, 1989, has been disclaimed

Int. Cl. C07c *63/26*

U.S. Cl. 260—515 P **9 Claims**

A slurry comprised of an alkali metal salt of an aromatic carboxylic acid, a disproportionation catalyst, an aryloxy compound and an inert high-boiling organic dispersant is subjected to heating at an elevated temperature in the presence of a compatible gas atmosphere to form a polycarboxylate having at least one additional carboxyl group.

3,784,640

PROCESS FOR PREPARING α-METHYL-β-(3,4-DIHYDROXYPHENYL)-ALANINE

Kentaro Okumura, Kobe, and Kazuo Matsumoto and Mamoru Suzuki, Osaka, Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

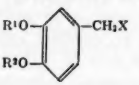
No Drawing. Filed Dec. 14, 1971, Ser. No. 207,950

Claims priority, application Japan, Dec. 29, 1970, 46/129,807

Int. Cl. C07c *101/72*

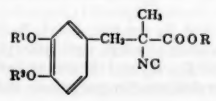
U.S. Cl. 260—519 **11 Claims**

A lower alkyl ester of α-isocyano-propionic acid is condensed with a compound of the formula:



(I)

wherein each of R^1 and R^2 is lower alkyl, or R^1 and R^2 are combined together to form a methylene radical and X is halogen, to produce a compound of the formula:



(II)

wherein R is lower alkyl, and R^1 and R^2 are as defined above. α-Methyl-β-(3,4-dihydroxyphenyl)-alanine is obtained by hydrolyzing the compound (II) with concentrated mineral acid. Alternatively, α-methyl-β-(3,4-dihydroxyphenyl)-alanine may be obtained by hydrolyzing compound (II) with dilute mineral acid to produce the corresponding α-methyl-β-phenylalanine ester, hydrolyzing the alanine ester with an alkali metal hydroxide to produce the corresponding α-methyl-β-phenylalanine, and then hydrolyzing some with concentrated mineral acid.

3,784,641

N,N-BIS ALKOXYMETHYL AND N,N-DIMETHYLOL SULFONAMIDES

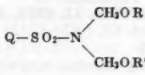
Giuliana C. Tesoro, Dobbs Ferry, N.Y., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

No Drawing. Original application Nov. 16, 1965, Ser. No. 508,149, now Patent No. 3,617,190. Divided and this application Aug. 20, 1971, Ser. No. 173,637

Int. Cl. C07c *143/74, 143/78*

U.S. Cl. 260—556 A **6 Claims**

Compounds of the structure:



wherein R and R^1 are hydrogen or lower alkyl and Q is an aliphatic or aromatic group useful as crosslinking agents.

3,784,642

1-AMINE-CYCLOBUTENE

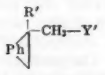
Erwin F. Jenny, Rudolf Wackernagelstrasse 14, Riehen, Switzerland, and Karl Schenker, Rottmannsbodenstrasse 99, Basel, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 535,368, Mar. 18, 1966, which is a continuation-in-part of application Ser. No. 297,675, July 25, 1963. This application Nov. 3, 1967, Ser. No. 680,324

Int. Cl. C07c *103/28*

U.S. Cl. 260—558 A **5 Claims**

Compounds of the formula



in which Ph represent an optionally substituted orthophenylene radical, R' hydrogen or a substituted or unsubstituted alkyl radical and Y' an acylamino group optionally further substituted at the nitrogen atom, e.g. 1-(acetyl-aminomethyl)-benzocyclobutene. Use: intermediates for the corresponding N-substituted 1-(aminomethyl)-benzocyclobutenes which possess analgesic, particularly antimorphine activity and also antitussive activity

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3,784,643

ARYLOXYALKYLGUANIDINES

John T. Suh, Mequon, and Joseph A. Skorcz, Milwaukee, Wis., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 755,744, Aug. 27, 1968. This application Dec. 11, 1970, Ser. No. 97,312

Int. Cl. C07c *129/00*

U.S. Cl. 260—564 A **2 Claims**

The compounds are aryloxyalkylguanidines which are useful as central nervous system depressants and antihypertensive agents. A compound disclosed in the application is 1-methyl-2-(2-methoxy-5-fluorophenoxy)-ethylguanidine nitrate.

3,784,644

PROCESS FOR PREPARING FLUOROPERHALOALKYLIDENE IMINES

Bryce C. Oxenrider, Florham Park, Wilhelmus M. Beyleveld, Whippany, and Cyril Woolf, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Feb. 26, 1970, Ser. No. 14,653
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 R 9 Claims

Fluoroperhaloalkylidene imines having the formula $Y_1Y_2C{=}NH$, wherein Y_1 and Y_2 are fluorine or fluoroperhaloalkyl radicals, are prepared by hydrolyzing the corresponding fluoroperhaloalkyl isocyanate having the formula Y_1Y_2FCNCO with water in the form of a hydrate such as hexafluoroacetone monohydrate. The fluoroperhaloalkylidene imines are useful as intermediates in the preparation of other fluorinated compounds.

3,784,645

METHOD FOR TREATING NITROGEN-CONTAINING POLYMERIC DISPERSANTS

Harry Chafetz, Poughkeepsie, William P. Cullen, Fishkill, and Edward F. Miller, Beacon, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Nov. 12, 1971, Ser. No. 198,467
Int. Cl. C07c *87/20*
U.S. Cl. 260—583 N 13 Claims

Method for treating nitrogen-containing polymeric dispersants for mineral lubricating oil compositions comprising admixing the dispersant with a particulate metal reactive with the unstable materials present in the dispersant, heating the mixture at a temperature in the range from about 200 to 400° C., separating a metal-containing layer, extracting the treated dispersant with a lower aliphatic alcohol and recovering a dispersant of improved thermal stability.

3,784,646

REACTIONS OF HALOGEN-SUBSTITUTED OLEFINS WITH ALKENES AND ALCOHOLS

John M. Holovka, Albuquerque, N. Mex., and Edward Hurley, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

No Drawing. Filed Aug. 18, 1970, Ser. No. 64,813
Int. Cl. C07c *49/08*
U.S. Cl. 260—593 12 Claims

In reactions involving the oxidation of olefins by rhodium trichloride in alcohol solutions, vinyl halides or allylic halides can be incorporated into the system to regenerate the catalyst. The products of both oxidation and regeneration reactions comprise olefins and/or acetals and/or ketones, e.g. 1-methoxy-1-phenyl ethane, 1,1-dimethoxyethane which are useful for octane improvers.

3,784,647

CURING EPOXIDE RESIN WITH BORON TRICHLORIDE-AMINE COMPLEX

George Latto Fleming, Saffron Walden, and Richard John Martin, Linton, England, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Aug. 9, 1971, Ser. No. 170,388
Claims priority, application Great Britain, Aug. 11, 1970, 38,647/70
Int. Cl. C08g *45/06*
U.S. Cl. 260—830 TW 9 Claims

Curable compositions comprise an epoxide resin and a complex of formula $BCl_3{\cdot}NR^4R^5R^6$ where R^4, R^5 and R^6 together with the nitrogen atom form a heterocyclic ring, or R^4 and R^5 both represent methyl groups and R^6 denotes an alkyl or aralkyl group of at least 6 and at most 18 carbon atoms.

Preferred compositions contain complexes in which $NR^4R^5R^6$ denotes pyridine, and those in which R^6 denotes an alkyl hydrocarbon group of 6–18 carbon atoms or a benzyl group.

The complexes act as latent hardeners.

3,784,648

PROCESS FOR THE PREPARATION OF FREE-FLOWING, LUMP-FREE, REDISPERSIBLE, SYNTHETIC RESIN POWDERS

Eduard Bergmeister, Paul-Gerhard Kirst, and Heinz Winkler, Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

No Drawing. Filed Oct. 1, 1971, Ser. No. 185,807
Int. Cl. C08g *37/32*
U.S. Cl. 260—856 7 Claims

This invention relates to a process for the preparation of free-flowing, lump-free, redispersible synthetic resin powders by spray-drying aqueous dispersions of synthetic resins containing an added amount of a water-soluble condensation product from melamine, formaldehyde and containing sulfonate groups.

3,784,649

HIGH MOLECULAR WEIGHT IONENE POLYMERIC COMPOSITIONS

Stanley J. Buckman, John D. Pera, Fred W. Raths, and Gerald D. Mercer, Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

No Drawing. Filed Mar. 30, 1971, Ser. No. 129,593
Int. Cl. C08f *3/24, 29/34*
U.S. Cl. 260—874 31 Claims

High molecular weight ionene polymeric compositions are prepared by reacting a dihalo organic compound with a secondary or a ditertiary amine and then reacting the resultant product with a polymeric backbone composition and a coupling agent. The resulting polymers have utility in many diverse applications.

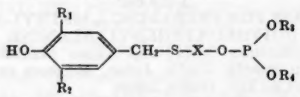
3,784,650

3,5-DIALKYL-4-HYDROXYBENZYL MERCAPTO (ACETIC ACID ESTER) CONTAINING PHOSPHITES

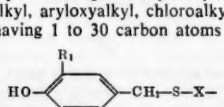
Heinz Eggensperger, Gadernheim uber Bensheim, Volker Franzen, Heidelberg, and Hans Stephan, Bensheim, Bergstrasse, Germany, assignors to Ciba-Geigy Marienberg GmbH, Lautern-Odenwald, Germany

No Drawing. Continuation-in-part of application Ser. No. 748,619, July 30, 1968, now Patent No. 3,655,833. This application June 22, 1971, Ser. No. 155,623
Claims priority, application Germany, Aug. 12, 1967, P 16 43 880.5
The portion of the term of the patent subsequent to Apr. 11, 1989, has been disclaimed
Int. Cl. C07f *9/08*; C08f *45/58*
U.S. Cl. 260—948 23 Claims

Novel compounds having the formula



wherein R_1 is selected from the group consisting of hydrogen and alkyl radicals having 1 to 6 carbon atoms, R_2 is an alkyl radical having 1 to 6 carbon atoms, X is selected from the group consisting of alkylene radicals having 1 to 6 carbon atoms are carboxyl interrupted alkylene radicals having 1 to 6 carbon atoms, when R_1 or R_2 is other than tert. butyl R_3 and R_4 are selected from the group consisting of alkyl, aryl, alkaryl, arylalkyl, alkoxyalkyl, aryloxyalkyl, chloroalkyl, and chloroarylalkyl all having 1 to 30 carbon atoms and



and, when R_1 and R_2 are tert. butyl, R_3 is selected from the group consisting of alkyl, aryl, alkaryl, arylalkyl, alkoxyalkyl, where R_1, R_2 and X are as defined above and are useful as stabilizers for polymeric compositions.

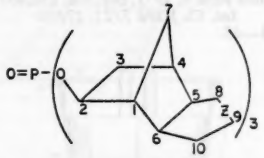
3,784,651

TERTIARY PHOSPHORIC ESTERS OF TRICYCLIC ALIPHATIC ALCOHOLS

Yoshiaki Inamoto, Wakayama, and Takeji Kadono, Kainan, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Filed June 22, 1971, Ser. No. 155,610
Claims priority, application Japan, June 24, 1970, 45/54,978
Int. Cl. C07f 9/08
U.S. Cl. 260—956 1 Claim

A compound of the formula



wherein Z is a single or double bond, is prepared by reacting 2-exo-hydroxy-exo-trimethylenenorbornane or 2-exo-hydroxy-2,3-dihydro-exo-dicyclopentadiene with phosphorus oxyhalide, in the presence of heterocyclic aromatic tertiary amine having a nitrogen atom as a member of the heterocyclic ring. The compounds are useful as additives for synthetic lubricants and hydraulic oils.

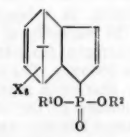
3,784,652

INDENYLPHOSPHONATES

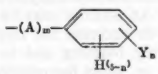
Jerome A. Gourse, Chicago, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Filed Apr. 19, 1972, Ser. No. 245,631
Int. Cl. C07f 9/40
U.S. Cl. 260—956 6 Claims

This invention discloses new chemical compounds of the formula



wherein X is halogen; and R^1 and R^2 are independently selected from the group consisting of alkyl and



wherein A is an alkylene group of up to 4 carbon atoms; *m* is an integer from 0 to 1; Y is halogen or alkyl; and *n* is an integer from 0 to 5. The compounds of the above description are useful as fire retardants.

3,784,653

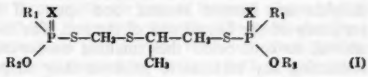
THIOL- OR THIONOTHIOL-PHOSPHORIC OR -PHOSPHONIC ACID ESTERS

Gerhard Schrader, Wuppertal-Cronenberg, and Ingeborg Hammann, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 19, 1970, Ser. No. 65,323
Claims priority, application Germany, Sept. 10, 1969, P 19 45 700.2
Int. Cl. A01n 9/36; C07f 9/16, 9/40
U.S. Cl. 260—929 5 Claims

Thiol- or thionothiolphosphoric or phosphonic acid esters, e.g. bis-O,O-dialkyl thiolphosphoric or bis-O-alkyl-alkanethiol phosphonic acid esters of halomethyl-1-halo-isopropylthioether and their thiono analogues, wherein the alkyl groups are lower alkyl and are optionally halogen-substituted, which possess arthropodicidal, especially acaricidal and insecticidal, properties and which may be produced by conventional methods.

The compounds have the formula



(I)

wherein

R_1 is an optionally halogen-substituted lower alkyl or alkoxy radical,

R_2 is an optionally halogen-substituted lower alkyl radical, and

X is an oxygen or sulfur atom.

3,784,654

O-ALKYL(-CYCLOALKYL)-S-ALKYL-S-PHENYL-PHOSPHORODITHIOLATES

Toyohiko Kume and Kazuomi Yasui, Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 3, 1969, Ser. No. 830,153
Claims priority, application Japan, June 18, 1968, 43/41,618
Int. Cl. A01n 9/36; C07f 9/16
U.S. Cl. 260—958 11 Claims

O-alkyl(-cycloalkyl)-S-alkyl - S - phenyl-phosphorodithiolates, i.e. O-alkyl and cycloalkyl-S-alkyl-S-(optionally chloro and methyl-substituted)-phenyl - phosphorodithiolates or -dithiolphosphates, which possess fungicidal properties.

3,784,655

PRESS POLISHING CURVED TRANSPARENT POLYCARBONATE SHEET MATERIAL

Richard R. Lewchuk, Allison Park, and Norman Shorr, Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Mar. 16, 1971, Ser. No. 124,928
Int. Cl. B29d 11/00
U.S. Cl. 264—1 5 Claims

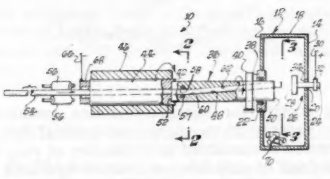
An improved method of press polishing transparent polycarbonate sheet material between complementary shaped, optically smooth surfaces of press polishing members that have shapes conforming to the shape desired for the transparent polycarbonate sheet involving timely separation.

3,784,656

METHOD OF PRODUCING SPHERICAL POWDER BY ECCENTRIC ELECTRODE ROTATION

Albert R. Kaufmann, Lexington, Mass., assignor to Whittaker Corporation

Filed Dec. 3, 1971, Ser. No. 204,493
Int. Cl. B01j 2/02
U.S. Cl. 264—8 14 Claims



A method for producing generally spherical particles from materials, e.g., metals, initially in rod form. The preferred method comprises feeding a consumable rod from which the particles are to be formed into a heating zone while orbiting the leading end of the rod about its longitudinal axis and, simultaneously, rotating the rod

about the same axis. The leading end of the rod is heated to cause melting of the rod material. Due to the spinning of the rod and the melted form of the rod material, liquid droplets are formed around, and spun off from, the periphery of the heated end of the rod. The droplets are allowed to cool below their melting temperature before contacting any surfaces to preserve their shape and are thereafter collected as solid, generally-spherical particles.

The method is preferably carried out in apparatus comprising a chamber with wall openings to receive one end of a rotatable shaft and a conventional electrode in opposing relationship. The shaft has a bore extending therethrough which is angled with respect to the longitudinal axis of the shaft and which is sized to slidably receive a consumable rod which, in turn, forms a consumable electrode. Power sources are provided (a) to rotate the shaft about its own axis to produce orbiting of the consumable electrode, (b) to rotate the latter about its own axis, and (c) to feed the consumable electrode through the shaft and into the chamber. An electrical energy source sufficient to establish an arc between the electrodes within the chamber to heat and melt the consumable electrode is provided. The chamber may be evacuated and then filled with an inert gas to provide a non-oxidizing atmosphere and is provided with seals necessary for this purpose.

3,784,657

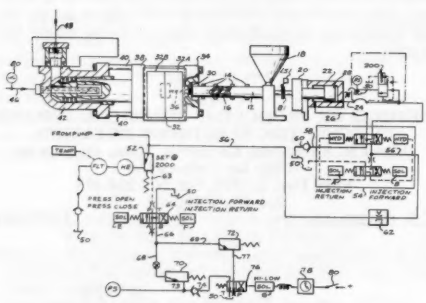
TIME MONITORED PROCESS FOR CONTROLLING INJECTION MOLDING CYCLE

Herman R. Hutchinson, Wyncote, Vasken F. Arpajian, Huntingdon Valley, and Robert S. Malcomson, Lansdale, Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Division of application Ser. No. 59,499, July 30, 1970, now Patent No. 3,695,800, dated Oct. 3, 1972. Continuation-in-part of application Ser. No. 18,142, Mar. 10, 1970, now Patent No. 3,642,402, dated Feb. 15, 1972. Divided and this application May 24, 1972, Ser. No. 256,607

Int. Cl. B29f *1/08*

U.S. Cl. 264—40 **4 Claims**



Process control for injection molding machines in which the viscosity of the plasticized material in a shot being prepared is monitored as a function of ram injection speed (rate of melt flow) at constant hydraulic pressure. The interval is measured during ram advancement between the time at which a pressure relief valve opens and the time that the mold cavities are substantially filled (when the ram is at end of stroke). If the time period exceeds or falls below predetermined limits, either (1) the heat input to subsequent shots being prepared may be respectively raised or lowered in increments, (2) high pressure injection time may be respectively added or subtracted in increments to increase or decrease the point in time at which lower secondary hydraulic pressure is applied, or (3) injection pressure may be respectively raised or lowered.

3,784,658

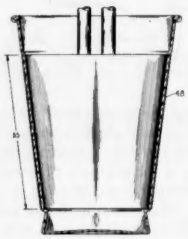
METHOD FOR THE SELECTIVE ABSORPTION OF A VOLATILE LIQUID FOAMING AGENT BY HEATING IN FORMING PLASTIC ARTICLES

James R. Studer, Woodridge, Ill., assignor to Monsanto Company, St. Louis, Mo.

Filed June 9, 1971, Ser. No. 151,457

Int. Cl. B29d *7/22, 27/00*

U.S. Cl. 264—45 **4 Claims**



Improvements in forming an integral foam layer on the outer surface of the sidewall of a thin walled thermoplastic container which involves contacting the inner surface of the container opposite the outer surface portion to be foamed, prior to exposure to the foaming agent, with an elevated temperature surface to preheat the wall portion of the cup which is to be foamed, thereby increasing the rate of penetration of the foaming agent into the thermoplastic during its subsequent exposure and preferably avoiding the necessity of a period of aging the container after its removal from exposure to the foaming agent and prior to foaming. The elevated temperature surface is preferably that of a mandrel conforming in shape to the inner surface of the container and which may have relieved areas thereon which do not contact and therefore, do not heat the wall of the container, thereby leaving unfoamed, indicia bearing or patterned portions within the foam boundary after vaporization of the foaming agent. An additive may be incorporated into the foaming agent to decrease the rate of generation of the foam cells during foaming and to improve the uniformity of cell size or, when the relieved surface mandrel is used, a dye which vaporizes at substantially the temperature of the foaming agent may be employed to generate a foam layer of one color having an indicia bearing or patterned area of another color. The thermoplastic of the container preferably has a coloring pigment incorporated therein which has been found to act as an effective nucleating agent.

3,784,659

METHOD OF PRODUCING CONTINUOUS PLASTIC SHAPES

Rosemarie Lupert, Eggli 1040, CH-9030 Abtwil, Switzerland

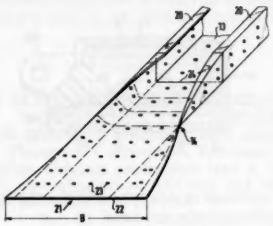
Filed Jan. 13, 1972, Ser. No. 217,504

Int. Cl. B29d *27/03*

U.S. Cl. 264—47 **11 Claims**

Continuous plastic shapes, such as channels or tubes are made from a laminate of curable, fluid, synthetic resin composition and a filamentous reinforcing material laid up on a continuously moving carrier foil by gradually deforming the laminate transversely to the direction of elongation. The laminate is held by suction or pressure

in conforming engagement with a rigid shaping face whose cross section changes gradually in the direction of laminate movement, and the resin in the deformed laminate is cured thereafter.

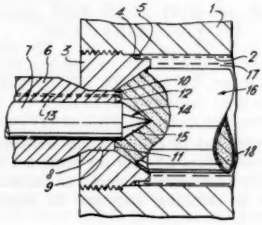


3,784,660

METHOD OF EXTRUDING MATERIAL FROM A PARTICULATE MASS USING A ROTATING EXTRUSION DIE

Harold Kenyon Hardy, Southport, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Dec. 7, 1971, Ser. No. 205,549
Claims priority, application Great Britain, Dec. 18, 1970, 60,364/70
Int. Cl. B29b *3/00*
U.S. Cl. 264—88 5 Claims



An extrusion process in which hydraulic pressure is exerted about a mass of particulate material to force it against a die member having a minor face carrying the extrusion orifice disposed so as to exert additional compressive stress against the particulate material to force it through the extrusion orifice.

3,784,661

PROCESS OF BLOW MOLDING CONTAINERS FROM PARTICLE FORM POLYETHYLENE RESINS

Jerome Sandel Schaul, Bloomfield, Kurt Falke Wissbrun, Short Hills, and Martin John Hannon, Plainfield, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 102,554, Dec. 29, 1970. This application Aug. 30, 1972, Ser. No. 284,806
Int. Cl. B29c *17/07;* C08f *3/04, 45/08*
U.S. Cl. 264—98 8 Claims

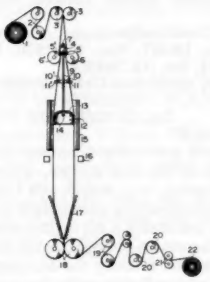
The present invention relates to a process of blow molding liquid containers from a specific class of all-particle form polyethylene resins; the process being carried out on blow molding machines operating at a pressure in the hydraulic system of less than about 1600 p.s.i. and generating an apparent shear rate, as the resin is extruded through the die gap, of between about 10,000 to about 100,000 reciprocal seconds. The particular type of all-particle form polyethylene resins are those having a density of from about 0.94 to about 0.97, a melt index of from about 0.1 to about 2.0 decigrams per minute, a die swell of from about 3.5 to about 4.5 and a critical stress for melt fracture of between about 1.0×10^6 to about 4.0×10^6 dynes per square centimeter.

3,784,662

PROCESS AND APPARATUS FOR PRODUCING UNIAXIALLY STRETCHED ARTICLES DIFFICULT TO SPLIT LONGITUDINALLY

Hiroyuki Hino, Hiroyoshi Asakuno, and Tetsuya Yamada, Ichiharashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Oct. 6, 1971, Ser. No. 186,891
Claims priority, application Japan, Oct. 13, 1970, 45/89,882
Int. Cl. B29d *7/24;* D06c *5/00*
U.S. Cl. 264—95 7 Claims



A uniaxially stretched tubular film of thermoplastic resin difficult to split in the longitudinal direction is produced from an unstretched tubular film of thermoplastic resin, by a process in which said unstretched tubular film is passed through a nip of feeding roll means, then passed vertically downwards the outside surface of a mandrel while enveloping the latter and while being heated from the outside, said mandrel being suspended by the nip of two parallel sets of mutually abutting roll means, and then the resultant film is drawn out by a roll means whose peripheral speed is greater than that of feeding roll means to effect longitudinal stretching, and in which said mandrel has a peripheral length equal to or slightly smaller than the peripheral length of the unstretched tubular film, the inside of said tubular film between the mandrel and the drawn out roll means is filled with a gas under pressure.

3,784,663

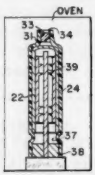
METHOD FOR MAKING ELECTRICAL CONNECTOR

Ralph G. D'Ascoli and Leon L. Alleva, Yonkers, N.Y., assignors to The Anaconda Company

Continuation of abandoned application Ser. No. 24,952, Mar. 6, 1970, which is a division of application Ser. No. 710,944, Mar. 6, 1968, now Patent No. 3,539,708. This application Mar. 31, 1972, Ser. No. 240,314
Int. Cl. B29c *27/20*
U.S. Cl. 264—230 1 Claim

Moisture-tight connectors are made from cut lengths of heat-shrinkable plastic tubing by shrinking one end of

the tubing around a plastic pellet that softens and bonds to it thus forming a seal. An inward constriction is formed in the other end of the tubing by shrinking it over a



block that is spaced away from an internal metal sleeve. The constriction is needed to retain a dielectric paste with which the connector is filled.

3,784,664

MOULDING PROCESS

Norman Brian Nicklin, Halesowen, England, assignor to British Industrial Plastics Limited, Manchester, England

No Drawing. Continuation-in-part of abandoned application Ser. No. 20,407, Mar. 17, 1970. This application Apr. 13, 1972, Ser. No. 243,833
Claims priority, application Great Britain, Mar. 24, 1969, 15,311/69
Int. Cl. B29c *9/00*
U.S. Cl. 264—246 10 Claims

A method of producing decorated thermoset polyester mouldings by a two-step process, wherein the first step comprises shaping, in a mould and under heat and low pressure, a thermosetting unsaturated polyester moulding composition, preferably a nil or low-shrinkage type, having applied thereto an unimpregnated decoration sheet of paper-like material whereby the decoration sheet is partly impregnated with polyester resin from the moulding composition and the moulding composition is at least partially cured so that the decoration sheet adheres to the surface of the moulding, and wherein the second step comprises applying thermosetting resinous material to the surface of the decoration sheet and reapplying heat and pressure to cause the resinous material to flow over the surface, complete impregnation of the decoration sheet and cure, and to complete curing of the moulding composition; the thermosetting resinous material preferably is a polyester resin or a surface finishing material such as melamine-formaldehyde resin.

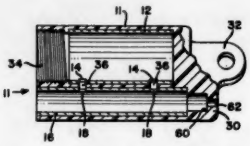
3,784,665

METHOD OF FABRICATING AN INTEGRATED PISTON AND CYLINDER MECHANISM AND VALVE ASSEMBLY

Jack D. Keefe, Dayton, and Eugene W. Finke, Miamisburg, Ohio, assignors to The Monarch Marking System Company, Dayton, Ohio

Filed Jan. 8, 1971, Ser. No. 104,873
Int. Cl. B29d *3/00*; B32b *31/06*
U.S. Cl. 264—261 9 Claims

A method and apparatus for fabricating the housing of an integrated piston and cylinder mechanism and control valve. The housing is formed by placing in a cavity defined by complementary mold sections a cylinder tube, a control valve tube and an inlet tube, with the three tubes properly positioned in the mold cavity and with respect to each other by means of removable mandrels. Openings through the tubes, which serve as fluid passages in the completed assembly, are kept open as a hardenable material is injected into the mold cavity by means of core pins or lugs projecting from the mandrels and extending



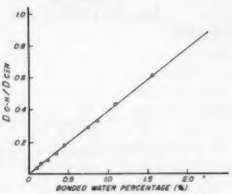
through the openings in one tube into the the corresponding openings in an adjacent tube.

3,784,666

PROCESS FOR PRODUCING ACRYLIC FIBERS

Hideto Sekiguchi, Yasuo Matsumura, Kojiro Aral, Kunio Maruyama, and Mitsuru Wakitani, Okayama, Japan, assignors to American Cyanamid Company, Stamford, Conn.

Filed June 8, 1971, Ser. No. 151,040
Claims priority, application Japan, Aug. 8, 1970, 45/69,481
Int. Cl. B29c *25/00*; D01f *7/00*
U.S. Cl. 264—234 10 Claims



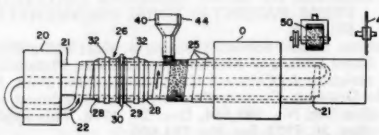
An improvement in conventional wet-spinning procedure for acrylic fibers wherein the fibers are heated under high humidity conditions to obtain an increase in bonded water and a resulting increase in elastic recovery properties.

3,784,667

METHOD FOR MANUFACTURING PIPES

Frede Hilmar Drostholm, 2950 Vedbaek, Denmark, and Leonard S. Meyer, Columbia, S.C.; said Meyer assignor to said Drostholm

Filed Mar. 22, 1972, Ser. No. 237,120
Int. Cl. B29d *23/08*
U.S. Cl. 264—145 9 Claims



The method and apparatus provide for production of pipe lengths having bell and spigot ends adapted to cooperate with each other serially in laying pipeline. The

technique provides for continuous production of pipe, with bell portions spaced at intervals, the bell portions being divided or severed in order to provide a bell end on the adjacent ends of the pipe lengths formed by the division. At points intermediate to the bell portions the pipe is also divided or severed in order to provide pipe lengths having spigot ends at one end and bell ends at the other end.

3,784,668

MELT BLENDED POLYETHYLENE-ETHYLENE COPOLYMER POLYBLENDS

William K. Neidinger, Columbus, Ind., assignor to Amos-Thompson Corporation, Edinburg, Ind.

No Drawing. Original application June 4, 1970, Ser. No. 43,591, now abandoned. Divided and this application July 23, 1971, Ser. No. 165,726

Int. Cl. B29c *5/04;* B29b *5/04*

U.S. Cl. 264—310 **2 Claims**

Claimed is a process of rotational molding of high density polyethylene and ethylene-polar monomer polyblends produced by a melt blend technique. Such polyblends have a high density polyethylene content of from about 50 to 95 percent by weight and an ethylene-polar monomer content of from about 50 to 5 percent by weight. These melt blended polyblends substantially retain the beneficial properties of high density polyethylene with the ethylene-polar monomer enhancing the stress-crack resistance and, unexpectedly, their improved stress-crack resistance is retained in rotational mold processing of the blends.

3,784,669

RECOVERY OF METAL VALUES FROM CHROME ETCHING SOLUTIONS

Carl H. Elges III, Philip R. Haskett, Donald J. Bauer, and Roald E. Lindstrom, Reno, Nev., assignors to the United States of America as represented by the Secretary of the Interior

No Drawing. Filed Oct. 3, 1972, Ser. No. 292,232

Int. Cl. C01g *3/02, 37/02*

U.S. Cl. 423—43 **5 Claims**

Chromium and copper are recovered, as oxides, from spent chrome etching solutions by means of a process comprising the steps of: (1) addition of a reducing sugar to reduce Cr(VI) to Cr(III) and to complex Cr(III) and Cu values in solution, (2) addition of base to raise the pH to a value of about 10 to 12, to reduce the copper and precipitate it as Cu_2O, (3) separating the precipitated Cu_2O, (4) heating the remaining solution at a temperature of about 50 to 70° C. for a period sufficient to break the Cr(III) complex, and (5) adjusting the pH of the solution to a value of about 6 to 9 to precipitate the chromium as hydrous chromium oxide.

3,784,670

TITANIUM DIOXIDE CONCENTRATE AND ITS MANUFACTURING PROCESS

Shigeki Yamada, Kyoto, and Kokichi Miyazawa, Hideaki Naka, and Yoshio Yoshida, Kusatsu, Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 68,555, Aug. 31, 1970. This application Apr. 10, 1972, Ser. No. 242,772

Claims priority, application Japan, Sept. 12, 1969, 44/72,016, 44/72,017; Sept. 22, 1969, 44/74,672

Int. Cl. C01g *23/00;* C22b *1/00*

U.S. Cl. 423—80 **16 Claims**

An improved process for leaching a titaniferous iron ore with an acid to remove iron and concentrate the titanium valve. The ore is leached with a mineral acid and the intermediate concentrate during the process of acid-leaching is magnetically separated into a fraction which is sufficiently concentrated and a fraction which is not sufficiently concentrated and only the latter is continuously leached. The concentration is effectively and economically carried out to give a high grade concentrate which has a coarse grain and a good fluidity.

3,784,671

PROCESS FOR THE RECOVERY OF ANTIMONY PENTACHLORIDE FROM CATALYST SOLUTIONS

Egon Joerchel and Rudolf Kohlhaas, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Nov. 16, 1971, Ser. No. 199,301

Claims priority, application Germany, Mar. 6, 1971, P 21 10 797.1

Int. Cl. C01b *29/00*

U.S. Cl. 423—88 **7 Claims**

The invention relates to a process of recovering antimony pentachloride from catalyst solutions used for the fluorination of chlorine containing hydrocarbons. The process is based upon a thermal decomposition of antimony pentachloride into antimony trichloride and chlorine at a temperature of 60° to 300° C. The organic impurities are extracted from the precipitated antimony trichloride by means of halogenated hydrocarbons. The remaining antimony trichloride is reoxidized with chlorine—which may be recycled from the step of the thermal decomposition—at a temperature of from 60° to 150° C. and a pressure of zero to five atmospheres to yield antimony pentachloride which is refined by distillation.

3,784,672

PROCESS FOR REDUCING THE TRIVALENT CHROMIUM CONTENT OF ALKALI METAL BISULFATE SOLUTIONS

Thomas R. Morgan and William W. Low, Syracuse, Christian A. Wamser, Camillus, and Charles P. Bruen, Fayetteville, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Original application Oct. 19, 1972, Ser. No. 82,024, now Patent No. 3,715,425. Divided and this application Sept. 21, 1972, Ser. No. 290,911

Int. Cl. C01d *5/02, 5/16*

U.S. Cl. 423—202 **3 Claims**

Chrome chemicals such as chromic acid (CrO_3) and alkali metal chromates and bichromates are prepared by a process which avoids the formation and treatment of "brown muds" which includes the processing steps of reacting an alkali metal bisulfate solution substantially free of trivalent chromium values with an aqueous solution of an alkaline roasted chrome ore mixture containing dissolved chrome ore values to convert the roasted mixture's chrome ore values at least in part to an alkali metal bichromate and separating said bichromate values. The alkali metal bichromate values may be reacted with a sulfuric acid to produce chromic acid. Also covered by the present invention is the removal of the chloride impurity from the bichromate values.

3,784,673

PROCESS FOR TREATING SODIUM BISULFATE

Wilson Stewart Cathcart, Cleveland, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

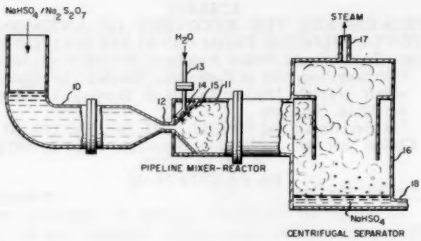
Filed May 25, 1972, Ser. No. 256,971

Int. Cl. C01d *5/02*

U.S. Cl. 423—203 **5 Claims**

An improved process to cool and rehydrolyze a melt mixture of sodium bisulfate and sodium pyrosulfate to sodium bisulfate is provided. The process comprises feeding water and the melt into a pipeline mixer having a reaction zone, the water fed at a pressure sufficient to atomize the water in the mixer and attain mixing of the water and melt, and the melt mixture fed through a venturi into the mixer at a temperature of at least 220° C. and at a pressure sufficient to seal the venturi throat against

back pressure of steam formed in the reaction zone within the mixer. Thus, rehydrolyzation of the sodium pyrosulfate



to sodium bisulfate occurs and sodium bisulfate is withdrawn from the reaction zone for further processing.

3,784,674

ATMOSPHERE PURIFICATION OF RADON AND RADON DAUGHTER ELEMENTS

Lawrence Stein, Downers Grove, Ill., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Sept. 9, 1971, Ser. No. 179,229
Int. Cl. C01b *23/00*
U.S. Cl. 423—249 **5 Claims**

A method of removing radon and radon daughter elements from an atmosphere containing these elements by passing the atmosphere through a bed of fluorinating compound whereby the radon and radon daughters are oxidized to their respective fluorides. These fluorides adhere to the fluorinating compound and are thus removed from the atmosphere which may then be recirculated. A method for recovering radon and separating radon from its daughter elements is also described.

3,784,675

PROCESS FOR REDUCING THE CONTENT OF NITROGEN OXIDES IN THE EXHAUST GASES FROM INTERNAL COMBUSTION ENGINES

Tadeusz P. Kobylinski, Cheswick, and Brian W. Taylor, Richland Township, Allegheny County, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Continuation-in-part of application Ser. No. 168,430, Aug. 2, 1971. This application Dec. 13, 1971, Ser. No. 207,545
Int. Cl. B01d *53/34*
U.S. Cl. 423—213.5 **19 Claims**

A method is proposed for the reduction of nitrogen oxides in exhaust gases from internal combustion engines to selectively form nitrogen as substantially the only nitrogen-containing product. The method comprises contacting an exhaust gas from an internal combustion engine at an elevated temperature in a reducing atmosphere with about 0.003 to about 0.5 troy ounce of ruthenium per 1000 cubic feet of exhaust gas per hour.

3,784,676

REMOVING SULPHUR FROM HYDROCARBONS

Gerald Moss, Oxford, England, assignor to Esso Research and Engineering Company

Original application June 5, 1968, Ser. No. 734,816, now abandoned. Divided and this application Apr. 30, 1971, Ser. No. 138,883
Int. Cl. C01b *17/60*
U.S. Cl. 423—242 **10 Claims**

Production of an SO_2 free gas by oxidation of sulfur containing materials in a fluidized bed of calcium or magnesium oxide with regeneration of the oxides from sulfates formed in the oxidation.

3,784,677

METHOD FOR THE PREPARATION OF METAL BORIDES

Geert Versteeg, Petten, and Albertus J. G. Engel, Heiloo, Netherlands, assignors to Reactor Centrum Nederland, The Hague, Netherlands

No Drawing. Filed Mar. 25, 1969, Ser. No. 810,375
Claims priority, application Netherlands, Mar. 26, 1968, 6804216; Belgium, Mar. 10, 1969, 71,113
Int. Cl. C01f *13/00*
U.S. Cl. 423—252 **13 Claims**

A method for the preparation of metal borides by heating metal halides or metal oxyhalides of the actinide group, the lanthanide group and the alkaline earth metals with boron.

3,784,678

PROCESS FOR REMOVING IRON FROM PHOSPHORIC ACID

Klaus Beltz, Budenheim (Rhine), Klaus Frankenfeld, Kirberg, Taunus, and Karl Gotzmann, Budenheim (Rhine), Germany, assignors to Chemische Fabrik Budenheim

No Drawing. Filed Sept. 20, 1971, Ser. No. 182,240
Claims priority, application Germany, Sept. 25, 1970, P 20 47 261.1
Int. Cl. C01b *25/16*
U.S. Cl. 423—321 **6 Claims**

A process for removing iron from phosphoric acid. A barium compound is added to the phosphoric acid including sulfate ions to precipitate barium sulfate whereby the iron content of the phosphoric acid is substantially reduced.

3,784,679

PROCESS FOR PRODUCING CARBON FIBRES

Pierre Chiche, Verneuil-en-Halatte, France, assignors to Charbonnages de France, Paris, France

No Drawing. Filed Apr. 27, 1971, Ser. No. 137,976
Claims priority, application France, May 19, 1970, 7018171
Int. Cl. C01b *31/07*
U.S. Cl. 423—447 **11 Claims**

A process for the production of carbon fibres from coal tar pitch or from other strongly aromatic distillation residues subjected to heat treatment at a moderate temperature wherein a hydrocarbon polymer is added to the starting material before or during said heat treatment which is followed by spinning, oxidizing, and carbonizing. Polyethylene, polypropylene, polystyrene, polybicyclo[2,2,1]-heptene-2, and rubber are preferred polymers.

3,784,680

CYCLICAL PROCESS FOR RECOVERY OF ELEMENTAL SULFUR FROM WASTE GASES

Herbert W. Strong, Shaker Heights, Jerrold E. Radway, Westlake, and Henry A. Cook, Fremont, Ohio, assignors to Basic Incorporated, Cleveland, Ohio

Filed Dec. 1, 1971, Ser. No. 203,772
Int. Cl. C01b *17/04*
U.S. Cl. 423—571 **4 Claims**

A process for removing sulfur dioxide (SO_2) from gases and recovering elemental sulfur comprising scrubbing the gases with a slurry containing a metal sulfide under conditions to react the sulfur dioxide with the sulfide to form a precipitate which is predominantly metal sulfite and elemental sulfur. A portion of the slurry is withdrawn and the precipitate is separated therefrom. The remaining slurry is recycled for reaction with additional sulfur dioxide and the precipitate is heated under conditions to

remove water therefrom and convert any metal thiosulfate therein to additional sulfite and elemental sulfur. Some metal sulfate may be present. The elemental sulfur is separated, and the sulfite and sulfate are then reduced to the sulfide which is recycled to the scrubbing slurry. Preferably, the metal sulfide is an alkali sulfide or alkaline earth sulfide.

3,784,681

X-RAY CONTRAST COMPOSITION CONTAINING BARIUM SULPHATE

Max Fischler, Enskede, Sweden, assignor to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

No Drawing. Filed Dec. 8, 1971, Ser. No. 206,169

Claims priority, application Sweden, Dec. 18, 1970, 17,187/70

Int. Cl. A61k *27/08*

U.S. Cl. 424—4 **4 Claims**

X-ray contrast composition containing barium sulphate and an acid stable protective colloid which is an anionic heteropolysaccharide formed by fermentation of *Xanthohomonas campestris* in a carbohydrate containing nutrient solution. The composition has improved stability during storage and during freezing and thawing.

3,784,682

DENSIFYING METAL HYDRIDES WITH HIGH TEMPERATURE AND PRESSURE

Leonard M. Niebylski, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Continuation-in-part of abandoned application Ser. No. 392,370, Aug. 24, 1964. This application Apr. 9, 1968, Ser. No. 721,135

Int. Cl. C01b *6/00, 6/06*

U.S. Cl. 423—645 **8 Claims**

A method of increasing the density of a hydride of a metal of Groups II–A, II–B, III–A and III–B of the Periodic Table which comprises subjecting a hydride to a pressure of from about 50,000 p.s.i. to about 900,000 p.s.i. at or above the fusion temperature of the hydride; i.e., between about 65° C. to about 325° C. Beryllium hydride obtained from this process has a density of at least 0.69 g./cc.

ERRATUM

For Class 424—4 see:
Patent No. 3,784,681

3,784,683

TABLET PREPARATION

Elliott Benjamin Prillig and Alexander Hing Chinn Chun, Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation of abandoned application Ser. No. 661,600, Aug. 18, 1967. This application Mar. 29, 1971, Ser. No. 129,225

Int. Cl. A61k *27/12*

U.S. Cl. 424—19 **2 Claims**

A pharmaceutical dosage form for oral administration is provided which travels substantially intact through the stomach and the small intestines and exposes the active ingredient erythromycin stearate in the large intestines where it is particularly useful in combatting amebiasis, a parasitic infestation. The new dosage form is prepared in such a manner to substantially prevent the active drug from being absorbed by the gastro-intestinal tract.

3,784,684

CORONARY DILATOR IN A PHARMACEUTICAL DOSAGE UNIT FORM

Friedrich Bossert, Wuppertal-Elberfeld, Wulf Vater, Opladen, Kurt Bauer, Opladen-Lutzenkirchen, and Karl-Heinz Adams, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 21, 1972, Ser. No. 282,476

Claims priority, application Germany, Aug. 24, 1971, P 21 42 316.5; Feb. 29, 1972, P 22 09 526.7

Int. Cl. A61j *3/07*

U.S. Cl. 424—37 **16 Claims**

An instant oral-release capsule is produced having a shell of gelatine which contains a mixture of

(a) 1 part by weight of 4-(2'-nitrophenyl)-2,6-dimethyl-3,5-dicarbomethoxy-1,4-dihydropyridine;
(b) 6 to 50 parts by weight of at least one polyalkylene glycol of 2 or 3 carbon atoms in the alkylene moiety and a mean molecular weight of 200 to 4000; and
(c) 0 to 10 parts by weight of at least one alcohol of 2 to 8 carbon atoms and 1, 2 or 3 hydroxy groups.

3,784,685

COSMETIC COMPOSITIONS TO REDUCE GREASY APPEARANCE OF THE HAIR AND SKIN

Gregoire Kalopissis, Paris, Claude Bouillon, Eaubonne, and Georges Manoussos and Claudine Berrebi, Paris, France, assignors to Société Anonyme dite: L'Oreal, Paris, France

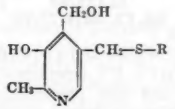
No Drawing. Filed July 21, 1970, Ser. No. 56,962

Claims priority, application Luxembourg, July 23, 1969, 59,150

Int. Cl. A61k *7/06*

U.S. Cl. 424—70 **4 Claims**

The active ingredient in a cosmetic preparation to reduce the greasy appearance of hair and skin has the formula:



in which R is an organic radical having at least one amine function and can include a carboxylic acid function, the latter can be esterified or amidified. The amine function can be salified by a mineral or organic acid and be substituted with an acyl or sulfonyl group, or substituted with one or two alkyl radicals which, in turn, can include an acid, acid ester, amide, amine, alcohol or quanide substituent or the amine function can be quaternized. The active ingredient can be administered in a conventional medium both orally and as a topical remedy by applying same to the skin.

3,784,686

METHOD OF INHIBITING THE ACTION OF RENIN IN HYPERTENSIVE MAMMALS

Richard P. Miller, Zionsville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 16, 1972, Ser. No. 226,744

Int. Cl. A61k *27/00*

U.S. Cl. 424—94 **1 Claim**

Method of inhibiting the action of resin by pepstatin both in vivo and in vitro, useful in determining presence of renin-associated hypertension.

3,784,687

PHOSPHINE OR PHOSPHITE GOLD COMPLEXES OF THIOETHANOL AND DERIVATIVES THEREOF TO TREAT ARTHRITIS

Elizabeth R. McGusty, Philadelphia, and Blaine M. Sutton, Hatboro, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Original application June 7, 1971, Ser. No. 150,734, now Patent No. 3,718,680. Divided and this application Nov. 13, 1972, Ser. No. 306,961

Int. Cl. A61k *27/00*

U.S. Cl. 424—212 **8 Claims**

Phosphine or phosphite gold complexes of thioethanol and derivatives thereof, such as ether or ester derivatives, having anti-arthritic activity are prepared by reaction of an appropriate phosphine or phosphite gold halide with thioethanol or its corresponding derivative.

3,784,688

ANTI-ANXIETY COMBINATION

Bernard Beer, Princeton, Donald E. Clody, Somerset, John R. Vogel, South Bound Brook, and Zola P. Horovitz, Princeton, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Oct. 19, 1971, Ser. No. 190,691

Int. Cl. A61k *27/00*

U.S. Cl. 424—244 **1 Claim**

An anti-anxiety combination is provided having substantially no sedative side effects and comprising a chlordiazepoxide-type compound or pyrazolopyridine carboxylic acid or ester and a xanthine-type compound.

3,784,689

IMIDAZOLIDINONE DERIVATIVES AS CENTRAL NERVOUS SYSTEM DEPRESSANTS

Walter Schindler, Riehen, Basel-Land, Erich Schmid, Basel, and Armin Zuest, Birsfelden, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Aug. 5, 1970, Ser. No. 61,511, now Patent No. 3,720,677. Divided and this application Aug. 23, 1972, Ser. No. 283,008

Claims priority, application Switzerland, Aug. 11, 1969, 12,125/69

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **3 Claims**

Compounds of the class of 1-[2-[4-(thieno[2,3-b][1,5]benzothiazepin-4-yl] - 1 - piperazinyl]-alkyl]-3-alkyl-2-imidazolidinones and their pharmaceutically acceptable acid addition salts have a depressant effect on the central nervous system; pharmaceutical compositions comprising such compounds and methods of producing a central nervous system depressant effect therewith are provided; a typical embodiment is 1-[2-[4-(thieno[2,3-b][1,5]benzothiazepin - 4 - yl)-1-piperazinyl]ethyl]-3-methyl - 2 - imidazolidinone.

3,784,690

CONTROL OF PHYTOPATHOGENIC FUNGI WITH AMIDINE COMPOUNDS

Karl Gätzi, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

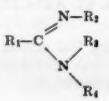
No Drawing. Original application May 22, 1968, Ser. No. 731,255, now Patent No. 3,598,800. Divided and this application Feb. 5, 1971, Ser. No. 113,108

Claims priority, application Switzerland, May 30, 1967, 7,615/67

Int. Cl. A01n *9/20, 9/22*

U.S. Cl. 424—244 **12 Claims**

Antifungal compositions are disclosed which contain as active ingredients amidines of the formula



wherein R_1, R_2, R_3 and R_4 represent certain organic substituents, or salts of such amidines with inorganic or organic acids; these compositions are particularly useful for the protection of plants against phytopathogenic fungi; and also for combatting acarinae such as ticks. Methods for controlling such fungi on the one hand, and acarinae, on the other hand, with the aid of the aforesaid amidine derivatives are also described.

3,784,691

IMIDAZOLE DERIVATIVES FOR TREATING PAIN, INFLAMMATION AND FEVER

Konrad Fitzi, Neuallschwil, Basel-Land, and Rudolf Pfister, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Dec. 28, 1970, Ser. No. 102,131. Divided and this application Aug. 23, 1972, Ser. No. 283,135

Claims priority, application Switzerland, Dec. 31, 1969, 19,401/69

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **9 Claims**

Compounds of the class of 2-alkyl- and 2-cycloalkyl-4,5-bis-phenyl-imidazoles, the phenyl groups of which being substituted by methoxy, methyl, hydroxy, methylsulfonyl and/or chloro, and pharmaceutically acceptable acid addition salts thereof have analgesic, antiphlogistic and antipyretic activity; they are active ingredients of pharmaceutical compositions and can be used for the relief and removal of pain as well as for the treatment of rheumatic, arthritic and other inflammatory diseases.

3,784,692

17-PROPIONATE, 21-ESTER DERIVATIVES OF 6α,9α-DIFLUOROPREDNISOLONE, COMPOSITIONS AND USE

Alberto Ercoli, Milan, and Rinaldo Gardi, Carate Brianza, Italy, assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Continuation-in-part of application Ser. No. 880,962, Nov. 28, 1969, which is a continuation-in-part of application Ser. No. 735,536, June 10, 1968, both now abandoned. This application Dec. 9, 1971, Ser. No. 206,523

Claims priority, application Italy, June 16, 1967, 17,273/67

Int. Cl. A61k *27/00*

U.S. Cl. 424—243 **15 Claims**

There have been prepared the new 17-propionate, 21-acetate, 17-propionate, 21-isobutyrate and 17,21-dipropionate of 6α,9α-difluoroprednisolone useful as anti-inflammatory agents. They may be incorporated in a suitable pharmaceutical carrier to obtain pharmaceutical compositions for the systemic and local treatment of inflammatory conditions and diseases.

3,784,693

3-SUBSTITUTED PHENYL-QUINAZOLINE-4(3H)-ONES AS SEDATIVE HYPNOTICS

Dietmar A. Habeck, Heidelberg, Germany, and William J. Houlihan, Mountain Lakes, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of application Ser. No. 78,164, Oct. 5, 1970, which is a continuation-in-part of application Ser. No. 16,603, Mar. 4, 1970, both now abandoned. This application Oct. 18, 1972, Ser. No. 298,603

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **5 Claims**

2-alkoxy and substituted alkoxy-3-substituted phenyl-quinazoline-4(3H)-ones, e.g., 2-ethoxy-3-(o-tolyl)-quinazoline-4(3H)-one are useful as central nervous system depressants.

3,784,694

HALOGENATED 2-ACYLOXY-DIPHENYLETHERS AS BACTERICIDES AND FUNGICIDES

Ernst Model, Basel, and Jakob Bindler, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Application Aug. 16, 1967, Ser. No. 660,926, now Patent No. 3,576,843, which is a continuation-in-part of application Ser. No. 570,742, Aug. 8, 1966, now Patent No. 3,506,720, which in turn is a continuation-in-part of abandoned application Ser. No. 345,080, Feb. 17, 1964. Divided and this application Dec. 28, 1970, Ser. No. 102,053

Int. Cl. A01n *9/20, 9/24*

U.S. Cl. 424—304 **9 Claims**

Diesters of organic dicarboxylic acids and certain halogenated hydroxy-diphenylethers wherein the acyl radical is linked to the benzene nucleus of the diphenylether in 2-position to the ether bridge inhibit microbial growth and are suitable for disinfection and the like purposes, and especially those of the aforesaid diesters wherein at least one diphenyl ether moiety is substituted at least in 4-position and preferably in 4- and 4'-position by halogen are particularly useful for the protection of cellulosic materials against bacteria and fungi, and for the treatment of infections of the intestinal system and the urinal tract of warm-blooded animals caused by pathogenic microorganisms; compositions containing the aforesaid esters in combination with a carrier therefor; and process of using the aforesaid compositions for the described purposes.

3,784,695

PRODUCTION OF AN HYPOTENSIVE EFFECT WITH ESTERS OF GALLIC ACID

William D. Cash, Riverside, Conn., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed May 27, 1971, Ser. No. 147,695

Int. Cl. A61k *27/00*

U.S. Cl. 424—308 **2 Claims**

Method for producing an hypotensive effect and hypotensive agents containing as active compound a gallic acid ester. An illustrative embodiment of the active compound is butyl gallate.

3,784,696

CONTROL OF INSECTS AND ACARINAE WITH 4,4' - DIBROMO- AND 4 - CHLORO-4'-BROMO-BENZILIC ACID ESTERS

Kurt Gubler, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Application Jan. 26, 1968, Ser. No. 700,750, now Patent No. 3,639,446, which is a continuation-in-part of abandoned application Ser. No. 589,530, Oct. 26, 1966. Divided and this application June 7, 1971, Ser. No. 150,718

Claims priority, application Switzerland, Dec. 13, 1965, 17,135/65; Feb. 2, 1967, 1,566/67; May 17, 1967, 6,921/67

Int. Cl. A01n *9/24*

U.S. Cl. 424—308 **9 Claims**

Certain esters of 4,4'-dibromo- and 4-chloro-4'-bromobenzilic acids are disclosed as having useful acaricidal, and in the case of certain esters, also insecticidal activities superior to those of the corresponding esters of 4,4'-dichloro-benzilic acid. The preparation of the new esters, and compositions containing them as active ingredients as well as a method of controlling, in particular, Acarinae with the aid of the new esters, and a method of controlling certain insects, in particular the Colorado beetle on potato plants, with the aid of isopropyl 4,4'-dibromo-benzilate are also described.

3,784,697

PHARMACEUTICAL COMPOSITION CONTAINING PHENOXYALKANE-CARBOXYLIC ACIDS, SALTS AND ESTERS THEREOF

Helmut Nahm, Kelkheim, Taunus, Germany, and Walter Siedel, deceased, late of Bad Soden, Taunus, Germany, by Helene Elise Siedel, nee Graf, heiress, Bad Soden, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Original application Jan. 9, 1969, Ser. No. 790,897, now Patent No. 3,721,703. Divided and this application Nov. 28, 1972, Ser. No. 310,162

Claims priority, application Germany, Jan. 11, 1968, P 16 68 896.3

Int. Cl. A61k *27/00*

U.S. Cl. 424—309 **13 Claims**

Phenoxyalkane-carboxylic acids with a 4-substituted phenoxy group in para position of the benzene ring, their esters with aliphatic, cycloaliphatic or araliphatic alcohols and their salts with non-toxic bases having a decreasing effect on the serum cholesterol level and a process for their manufacture.

3,784,698

HALOGENATED DIPHENYLETHER-CONTAINING COMPOSITIONS AND CONTROL OF PESTS THEREWITH

Ernst Model, Basel, and Jakob Bindler, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Application Apr. 3, 1967, Ser. No. 627,603, now Patent No. 3,629,477, which is a continuation-in-part of appplication Ser. No. 570,742, Aug. 8, 1966, now Patent No. 3,506,720, which in turn is a continuation-in-part of abandoned application Ser. No. 345,080, Feb. 17, 1964. Divided and this application Sept. 8, 1970, Ser. No. 70,190

Int. Cl. A01n *9/24;* **A61k** *27/00*

U.S. Cl. 424—311 **16 Claims**

Halogenated 2-hydroxy or 2-acyloxy-diphenylether-containing compositions which inhibit microbial growth and are suitable for disinfection and the like purposes, and especially those containing 2-hydroxy-diphenylethers or 2-acyloxy-diphenylethers substituted at least in 4-position and preferably in 4- and 4'-position by halogen, which are particularly suitable for the protection of cellulosic materials against bacteria and fungi, for the treatment of the infections of the intestinal system and the urinal tract of warm-blooded animals caused by pathogenic microorganisms, and the protection of polyamide fiber materials against attack by certain insects; furthermore processes of using the aforesaid compositions for the described purposes.

3,784,699

METHOD FOR INHIBITING MICROBIAL GROWTH EMPLOYING 2,6 - DIHYDROXY - 3,5-DITERT-BUTYL BENZOIC ACID

Togo Yamano, Nara, Kumiko Jono and Shigehiko Sato, Osaka, and Michio Nakanishi, Oita, Japan, assignors to Takeda Chemical Industries, Ltd., and Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

No Drawing. Filed Aug. 19, 1970, Ser. No. 65,261

Claims priority, application Japan, Aug. 20, 1969, 44/65,873

Int. Cl. A01n *9/24*

U.S. Cl. 424—317 **1 Claim**

2,6-dihydroxy-3,5-di-tert.butylbenzoic acid and salts thereof have an antimicrobial activity and are applied to, for example, foodstuffs, detergents, cosmetics and the like.

3,784,700

AMINO BENZYL ALCOHOL DERIVATIVES FOR TREATING HYPERTENSION AND INHIBITING GASTRIC SECRETION

Walfred S. Saari, Lansdale, and Charles S. Miller, deceased, by Ruth A. Miller, executrix, Norristown, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application July 10, 1969, Ser. No. 845,120, now Patent No. 3,714,229. Divided and this application Nov. 9, 1970, Ser. No. 88,140
Int. Cl. A61k 27/00
U.S. Cl. 424—311 6 Claims

Novel derivatives of 3-hydroxy-α-(1-aminoethyl)-benzyl alcohol, particularly ester derivatives of erythro or threo 3-hydroxy-α-(1 - aminoethyl) - benzyl alcohol and the corresponding 3-ether and 3-ester derivatives thereof, are described. Processes for preparing such novel compounds are also described. The novel compounds are useful as antihypertensive agents and inhibitors of gastric secretion.

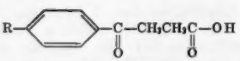
3,784,701

COMPOSITIONS CONTAINING SUBSTITUTED BENZOYLPROPIONIC ACIDS AND METHOD OF USE TO TREAT INFLAMMATION AND PAIN

Andrew Stephen Tomcufcik, Old Tappan, N.J., and Ralph Grassing Child, Pearl River, and Adolph Edward Sloboda, New City, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Sept. 21, 1970, Ser. No. 74,108
Int. Cl. A61k 27/00
U.S. Cl. 424—317 3 Claims

Compositions of matter and method of use of compounds of the formula:



wherein R is phenyl, phenoxy, lower alkoxyphenyl, phenylmercapto or benzoyl. These compounds are useful for meliorating inflammation and pain in warm-blooded animals.

3,784,702

ANTI-TUSSIVE COMPOSITIONS

Eugene Tatsuru Kimura, Morton Grove, and David John Anderson, Mundelein, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Jan. 14, 1972, Ser. No. 217,944
Int. Cl. A61k 27/00
U.S. Cl. 424—317 9 Claims

Covers a method of treating patients requiring antitussive therapy by administering to said patient an effective dose of a composition selected from the group consisting of 2-phenylbutyric acid, diethylaminoethoxyethanol, mixtures of 2-phenylbutyric acid, and diethylaminoethoxy-ethanol, and medicinally acceptable acid or base addition salts of the foregoing; and a pharmaceutical carrier.

3,784,703

METHOD OF TREATING HYPERTENSION

Clement A. Stone, Blue Bell, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation of abandoned application Ser. No. 89,104, Nov. 12, 1970. This application Feb. 29, 1972, Ser. No. 230,534
Int. Cl. A61u 27/00
U.S. Cl. 424—317 9 Claims

A method of treating hyptertension in an animal by administering to the animal L-dopa or its salts in conjunction with L-α-hydrazino-α-lower alkyl-3,4-dihydroxyphenylpropionic acid or α-hydrazino-3,4-dihydroxyphenylpropionic acid, the esters of each compound and the pharmaceutically acceptable non-toxic salts thereof.

3,784,704

COMPOSITIONS OF 4-BIPHENYL ACETIC ACID AND METHOD OF USE

Elliott Cohen, Pearl River, Adolph Edward Sloboda, New City, and Arnold Curtis Osterberg and Ralph Grassing Child, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Oct. 13, 1972, Ser. No. 297,540
Int. Cl. A61k 27/00
U.S. Cl. 424—317 4 Claims

The compound 4-biphenylacetic acid, its use and method of preparation is described. It is useful for the long lasting amelioration of pain in warm-blooded animals.

3,784,705

THERAPEUTICALLY ACTIVE PHENYLALKANE DERIVATIVES

Stewart Sanders Adams, Bernard John Armitage, and John Stuart Nicholson, Nottingham, England, and Antonio Ribera Blancafort, Madrid, Spain, assignors to Boots Pure Drug Company Limited, Nottingham, England

No Drawing. Application Dec. 15, 1969, Ser. No. 885,280, which is a continuation-in-part of abandoned application Ser. No. 425,624, Jan. 14, 1965. Divided and this application Nov. 21, 1972, Ser. No. 308,557
Int. Cl. A61k 27/00
U.S. Cl. 424—317 6 Claims

2-(4'-chloro-4-biphenyl)propionic acid possessing valuable anti-inflammatory activity. It also exhibits analgesic and antipyretic properties.

3,784,706

INHALANT ANESTHETIC COMPOSITION AND METHOD

Ross C. Terrell, Plainfield, N.J., assignor to Airco, Inc., New York, N.Y.

No Drawing. Filed Oct. 7, 1971, Ser. No. 187,582
Int. Cl. A61k 27/00
U.S. Cl. 424—342 2 Claims

1-chloro-1-hydroperfluoropropyl difluoromethyl ether of the fomula

$$CF_3—CF_2—CHCl—O—CHF_2$$

is useful as an inhalation anesthetic.

3,784,707

TREATMENT AND CONTROL OF MILK FAT DEPRESSION IN LACTATING COWS

Jerry W. Young, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

No Drawing. Filed Mar. 3, 1972, Ser. No. 231,728
Int. Cl. A61k 27/00
U.S. Cl. 424—343 8 Claims

A method of treatment or control of milk-fat depression in lactating cows wherein 1,3-butanediol is orally administered to the cows. The method is particularly useful where the lactating cows are being fed a high energy, low roughage ration.

3,784,708

DIRECTLY COMPRESSIBLE MONOCALCIUM PHOSPHATE

Joseph Anthony Ranucci, Bloomfield, N.J., and Prabhakar Ranchhordas Sheth, Nanuet, N.Y., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Feb. 28, 1972, Ser. No. 230,068
Int. Cl. A61k 9/00
U.S. Cl. 424—357 1 Claim

Directly compressible monocalcium phosphate (MCP) having a particle size distribution such that not less than 70% is below 74 microns, not less than about 98% is below 105 microns and not more than about 1% is larger than 150 microns as well as its use in directly compressible tablet formulations are disclosed.

3,784,709

POLYOXYALKYLENE DERIVATIVES OF POLYGLYCEROL ESTERS AS DOUGH CONDITIONERS

Antal G. Oszlanyi, Brook Park, and Richard J. Zielinski, Middleburg Heights, Ohio, assignors to SCM Corporation, Cleveland, Ohio

No Drawing. Filed Jan. 18, 1971, Ser. No. 107,513
Int. Cl. A21d 2/16
U.S. Cl. 99—91 5 Claims

Yeast-raised bakery products are shown containing as a portion of the dough conditioner therefor a polyoxyalkylene derivative of a polyglycerol higher fatty acid ester.

3,784,710

READY-TO-USE BATTER PRODUCT

Roland D. Earle, 749 N. Southlake Drive, and Morton S. Baum, 1131 Washington St., both of Hollywood, Fla. 33020

No Drawing. Filed Oct. 28, 1971, Ser. No. 193,586
Int. Cl. A21d 13/08
U.S. Cl. 426—128 19 Claims

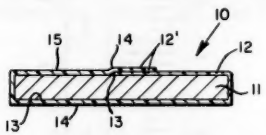
A liquid, ready-to-use batter mixture which is stable chemically and bacteriologically. In addition to conventional batter components such as flour, water, shortening and flavoring, the batters of this invention contain effective amounts of ethyl alcohol to prohibit bacterial growth in the mixture at room temperature. The amounts of ethyl alcohol are also effective to prevent an increase of viscosity of the mixture by controlling the swelling of the flour by the water. The batter also contains effective amounts of heat coagulatable binding agent having the capability of forming a texture around the flour upon the application of heat to the batter.

3,784,711

SURFACE TREATED CHEESE PACKAGE AND METHOD

William P. Kane, Bon Air, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 2, 1971, Ser. No. 177,368
Int. Cl. B65b 25/06
U.S. Cl. 426—130 2 Claims



A cheese package comprising a piece of cheese wrapped in a polyester film. The inner surface of such film, which contacts the cheese, is uncoated and the outer surface thereof, which does not contact the cheese, is coated with a vinylidene chloride copolymer containing at least an ester wax and a solid particulate. The uncoated inner surface of the film is treated, by electrical discharge, to improve adhesion between such inner surface and the cheese which is extruded onto, or positioned in contact with, this film surface in molten form.

3,784,712

GUM GELLING SYSTEM XANTHAN-TARA DESSERT GEL

Martin Glicksman, Valley Cottage, and Elizabeth H. Farkas, Yonkers, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Dec. 23, 1970, Ser. No. 101,151
Int. Cl. A23l 1/04
U.S. Cl. 426—167 2 Claims

A thermally-reversible, room-temperature setting gel resistant to either acid degradation or syneresis upon lengthy heating is prepared from a mixture of xanthan gum and tara gum.

3,784,713

MOISTURE BARRIER COATING COMPOSITION

Frank P. Colten, Dover, Del., and Morton Kaplan, Battle Creek, Mich., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Jan. 4, 1971, Ser. No. 103,863
Int. Cl. A23g 1/00, 3/00
U.S. Cl. 426—171 6 Claims

A chocolate coating with improved moisture barrier properties is obtained by the incorporation of a minor amount of an alkali or alkaline earth metal derivative of isolated soy protein into the composition.

3,784,714

PROTECTIVE COATINGS FOR CONFECTIONERIES AND BAKERY PRODUCTS

James L. McReynolds and Harry H. Topalian, Dover, Del., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Jan. 11, 1971, Ser. No. 105,697
Int. Cl. A23g 3/00
U.S. Cl. 426—171 4 Claims

Improved moisture and oxygen protection is obtained in a chocolate or imitation chocolate coating by the addition of a minor amount of calcium stearate to the composition. This type of coating prevents the moisture loss from coated candy centers or bakery products with high moisture and vapor pressure. The candy center, cookie filling or bakery product consequently remains soft in texture and of stable flavor quality over extended periods of time.

3,784,715

CHOCOLATE FLAVORED LIQUID CONFECTIONS AND METHODS OF MAKING THE SAME

Sidney Arden, Forest Hills, N.Y., assignor to Consolidated Foods Corporation, doing business as Popsicle Industries, Englewood, N.J.

No Drawing. Filed Oct. 4, 1972, Ser. No. 295,058
Int. Cl. A23g 1/00
U.S. Cl. 426—172 11 Claims

Chocolate flavored liquid confections in which the cocoa or chocolate particles are uniformly suspended and which possess excellent storage properties may be produced by combining a solution of about 1 to 5 weight percent cocoa or equivalent in chocolate liquor or bittersweet chocolate, about 15–25 weight percent of a sweetener, about 0.05 to 0.75 weight percent xanthan gun, about 0.05 to 0.20 weight percent preservatives, with added food acid, optional salt and artificial flavoring and sufficient water to achieve a solution solids content of 15–30 weight percent solids. The food acid is added in sufficient quantity to maintain a solution pH of about 4.7 to 5.6. The solution mixture is heated to about 180° F. for 30 minutes then cooled to 40–45° F. and filled in plastic film paks.

3,784,716

CEREALS CONTAINING DISCRETE NUTRIENT PARTICLES ON THE SURFACE

Herbert D. Spangler, Philadelphia, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Jan. 28, 1970, Ser. No. 6,577
Int. Cl. A23l 1/30
U.S. Cl. 426—289 2 Claims

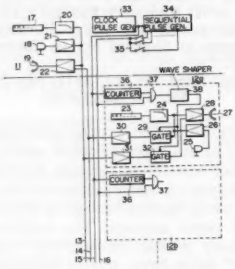
Cereals are dry coated with a coating composition containing nutrient particles precoated with a fatty acid, the coating composition having been applied when the cereal and the coating composition are at a temperature at which said fatty acid is tacky.

ELECTRICAL

3,784,717
GROUP TEACHING SYSTEM FOR MUSICAL INSTRUMENTS INCORPORATED WITH INFORMATION EXCHANGING ARRANGEMENT BETWEEN A TEACHER STATION AND A PLURALITY OF STUDENT STATIONS

Eisaku Okamoto, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Mar. 13, 1973, Ser. No. 340,656
Claims priority, application Japan, Mar. 14, 1972, 47-25889
Int. Cl. G09b *15/00*
U.S. Cl. 84—470 **4 Claims**



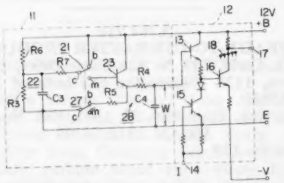
A group teaching system for musical instruments includes with an information-exchange circuit arrangement provided between a teacher station and a plurality of student stations. The teacher station comprises a clock pulse generator, a ring counter for generating the same number of sequential pulses as the student stations upon receipt of clock pulses from said generator and a switch assembly for selectively supplying as selection pulses one or more pulses from the ring counter to the student stations. Each student station comprises a ring counter and a circuit for detecting the corresponding selection pulse in synchronization with a clock pulse from the clock pulse generator, the detected selection pulse being used in producing a gating signal. The student station, further has gate circuits or switches included in the information-exchange circuit arrangement so as to establish a communication path between the teacher station and one or more selected student stations in response to the gating signal thereby permitting information exchange therebetween.

3,784,718
TOUCH-RESPONSIVE KEYING CIRCUIT FOR ELECTRONIC MUSICAL INSTRUMENTS

Yasuji Uchiyama, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed July 20, 1972, Ser. No. 273,608
Claims priority, application Japan, July 20, 1971, 46/53580; July 20, 1971, 46/63475; July 20, 1971, 46/63476
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.13 **5 Claims**

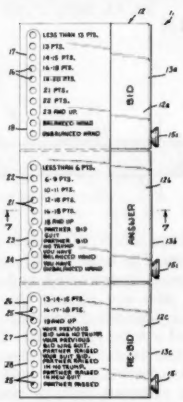
In an electronic musical instrument, tone keyer circuits are respectively controlled by touch-responsive keying circuits. The touch-responsive keying circuit comprises: a key switch having a break contact, a make contact and a movable contact; a first charge-discharge circuit having a charging capacitor and a discharging resistor both connected between the movable contact and the ground; an electrical source +B connected to the break contact; a switching transistor with its base connected to the make contact; and a second charge-discharge circuit being provided between the emitter of the transistor and the ground with a second capacitor and with a series circuit of a second resistor and an normally closed switch which is ganged with the key switch, the capacitor being connected to the keyer circuit. While the movable contact of the key switch travels from the break contact to the make contact, the first charge-discharge circuit is discharged with a predetermined time constant. The switching transistor is brought conductive to the extent responsive to a charged voltage remaining in the first charge-discharge circuit at the time the movable contact touches the make contact. The second charge-discharge circuit is charged through the transistor to establish a keying voltage.



3,784,719
BRIDGE BIDDING INDICATOR

James A. Mentzer, 3821 Bassett Creek Dr., Minneapolis, Minn.

Filed Aug. 10, 1972, Ser. No. 279,678
Int. Cl. G09b *19/22*
U.S. Cl. 35—8 B **8 Claims**



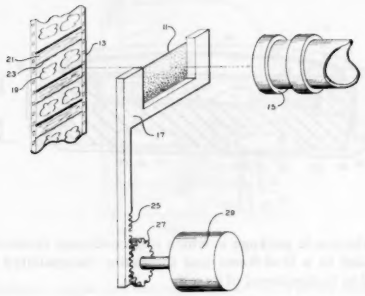
A bridge bidding indicator having a plurality of magnetically attractable instruction cards each of which includes an apertured information field representative of a bridge hand of particular evaluation, and a bidding instruction corresponding to such evaluation. The instruction card deck is placed in a box housing having a hinged closure member, and pegs are selectively inserted through one face of the housing into the apertured information fields to represent a particular hand evaluation and to retain all but the appropriate instruction card. The chosen card is removed from the deck by opening the closure member, a portion of which is magnetized and engages the deck when closed.

3,784,720

VARIABLE VISIBILITY SIMULATOR

Melvain Oliphant, Binghamton, N.Y., assignor to The Singer Company, New York, N.Y.

Filed Sept. 14, 1970, Ser. No. 71,983
Int. Cl. G09b 9/08; B64g 7/00
U.S. Cl. 35—12 N **3 Claims**



Apparatus to simulate the effects of fog or the like in a film projection visual system. The effects are obtained by placing a fog mask mounted on a moveable holder in the path of the projected image between the film and projection lens. By controlling the vertical position of the mask and holder various degrees of visibility may be simulated.

ERRATA

For Classes 84—470 and 84—1 see:
Patents Nos. 3,784,717 and 3,784,718

ERRATUM

For Class 179—6 see:
Patent No. 3,784,721

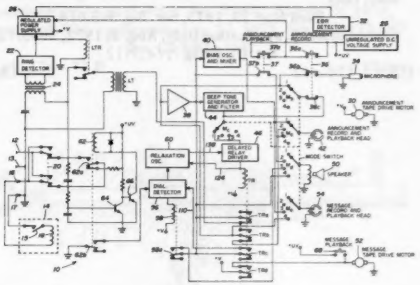
3,784,721

SYSTEM FOR SCREENING TELEPHONE CALLS

Jack S. Kilby, 7723 Midburg, Dallas, Tex.

Filed Nov. 22, 1971, Ser. No. 200,804
Int. Cl. H04m 1/64
U.S. Cl. 179—6 R **15 Claims**

A system for screening telephone calls is described which intercepts an incoming ring signal to prevent disturbing the called party. The system produces an off-hook condition and responds with a recorded announcement specifying the activity in which the called party is involved and indicating that he would prefer not to be interrupted, and also gives instructions as to how the calling party may nevertheless continue the call by initiating an additional dialed signal if he wishes. When the calling party initiates the additional signal identified by the instruction, such as by dialing one or more digits, or when an additional prearranged signal is transmitted, the called party is summoned to the telephone. As an alternative to interrupting the called party, the calling party may record a message. The recorded announcement may be modified by the subscriber at any time to tailor the announcement to the occasion to enable



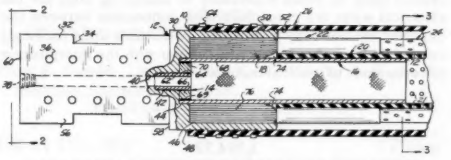
the calling party to better use his judgment as to when to interrupt. Other telephone answering functions are also described.

3,784,722

WATER-COOLED ELECTRIC FURNACE CABLE

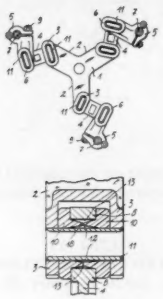
Daniel J. Goodman, 32326 Westbury Dr., St. Clair Shores, Mich.

Filed July 17, 1972, Ser. No. 272,579
Int. Cl. H01b 7/34
U.S. Cl. 174—15 C **9 Claims**



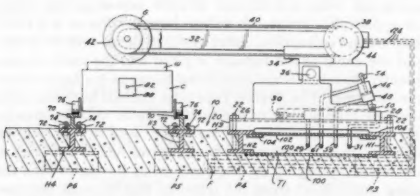
To prevent wear and cutting of the hair-like wires of the stranded conductor wire ropes of a flexible water-cooled electric furnace conductor cable and its tubular jackets and core by their flexing against the end of the riser tubes in the terminals thereof, the riser tube of each terminal is flexible and is constructed from non-ferrous flexible non-magnetic metal such as phosphor bronze, as a short hose portion or as a short tightly-wound coil spring, either of which flexes with the bending of the cable as the furnace is tilted and the cable is consequently stretched while suspended between the furnace and the transformer. The flexible riser tube extends from the cable conductor rope pocket of the terminal head into the interior of the cable so as to prevent the solder used in securing the conductor ropes in the pocket from flowing into the interior of the cable and plugging up the water holes through which the cooling water flows from the terminal end through the riser tube by way of the perforated tubular core into the interior of the cable and into the flexible elastomeric perforated tubular jackets surrounding the cable conductor ropes. The connection between the terminal and the flexible riser tube is made by means of a tubular coupling including a threaded tubular stem or nipple threaded into the inner end of the terminal cooling water bore and carrying a correspondingly internally-threaded annular disc the periphery of which is joined to the inner end of the flexible riser tube by an annular layer of solder. The coupling and disc are of non-magnetic metal such as brass.

3,784,723
SPACING MEMBER FOR WIRE GROUPS IN ELECTRICAL OVERHEAD LINES
Lorenzo Cantamessa, via del Tonale e della Mendola 58, Endine, Italy
Filed May 23, 1973, Ser. No. 363,014
Claims priority, application Italy, Aug. 3, 1972, 2943/72
Int. Cl. H02g 7/14, 7/12
U.S. Cl. 174—42 4 Claims



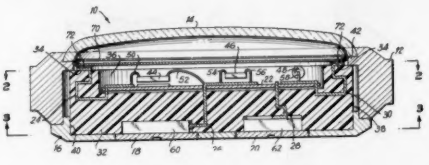
Spacing member for wire group in electrical overhead lines capable of ensuring a constant rate of damp for the vibrations of wires connected thereto. The spacing member includes a central body to which a plurality of anchoring clips for the electrical wires are connected. The connection between the clips and central body is provided by movable arms rockingly carried on pins of ovoidal cross-section with the interposition of cores made of resilient material.

3,784,724
SUBFLOOR SYSTEM FOR GRINDING APPARATUS
Richard G. Hopkins, 5160 Lake Dr., Rt. No. 1, Bennington Twp., Shiawasse County, Mich.
Filed Dec. 18, 1972, Ser. No. 316,101
Int. Cl. H02g 3/26
U.S. Cl. 174—48 12 Claims



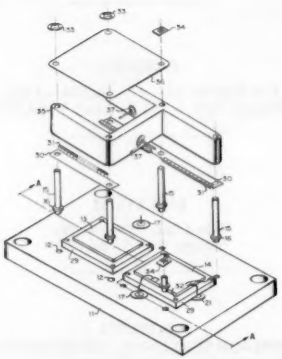
A subfloor system for supporting machinery having hydraulically and electrically operated components. The system comprises a framework of horizontal beams some of which define trenches for hydraulic piping. The beams are raised on stools or pedestals to allow electric conduits to pass beneath. Anchor bolts are rigidly secured to the beams to anchor the machinery. At final installation, concrete is poured up to the level of the tops of the beams to embed the beams and the electrical conduits, but without filling the trenches so that the hydraulic piping remains accessible.

3,784,725
ELECTRONIC HYBRID PACKAGE
Carroll R. Perkins, San Diego, and Irwin A. Lucks, Garden Grove, both of Calif., assignors to Solitron Devices, Inc., San Diego, Calif.
Filed July 24, 1972, Ser. No. 274,627
Int. Cl. H02g 13/08; H05k 5/00
U.S. Cl. 174—52 R 5 Claims



An electronic package in which semiconductor technology is bonded to a lead-frame and thereafter encapsulated and formed to be functional of its self.

3,784,726
MICROCIRCUIT PACKAGE ASSEMBLY
James M. Smith, San Jose, and George A. Drennan, Mountain View, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed May 20, 1971, Ser. No. 145,457
Int. Cl. H03k 5/00
U.S. Cl. 174—52 S 15 Claims



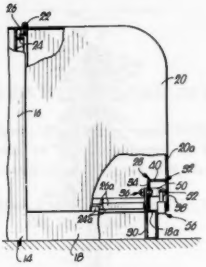
A hermetically sealed package for microcircuits employs a base plate on which one or more microcircuits may be mounted by, for example, soldering thereto or by means of studs, the studs being positioned in the base plate so as to accommodate the microcircuits which are held down on the base plate, for example, by spring fasteners mounted on the studs. The microcircuits may be mounted on a heat conductive carrier base. Electrical feedthroughs are hermetically sealed in the base plate. In certain forms of the package, an isolation wall structure is employed to isolate one microcircuit from another, the wall being secured to the base plate via studs and stud fasteners. A cover is hermetically sealed to the base plate over the microcircuits, carrier, isolation wall and feedthroughs. A novel diffusion weld technique is used to seal the studs and feedthroughs in the base plate.

3,784,727

TAMPER RESISTANT, LOCKABLE ENCLOSURE APPARATUS FOR TRANSFORMERS AND THE LIKE

Harold Dennis Haubein, Centralia, Mo., assignor to A. B. Chance Company, Centralia, Mo.

Filed Sept. 1, 1972, Ser. No. 285,725
Int. Cl. H05k 5/04
U.S. Cl. 174—52 R 14 Claims



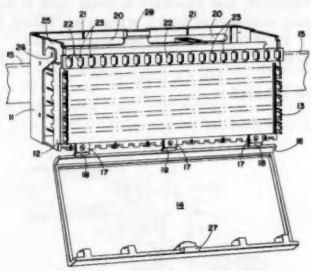
Enclosure apparatus has one member, such as the swingable access hood of an electrical transformer, which may be secured tightly against another member, such as the body of the transformer, and locked in that position without exposing the locking means to tampering. A closed overhang on one member has an inset receptacle which both conceals and protects a threaded fastener interconnecting the member, and a padlock, also removably disposed in the receptacle, blocks an access hole in the overhang for the fastener when the padlock is locked.

3,784,728

CONNECTING BLOCK WITH HINGED TERMINAL MEANS

George De Bortoli, Ottawa, and Helmut Hans Lukas, Carleton Place, Ontario, both of Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Nov. 20, 1972, Ser. No. 308,054
Int. Cl. H01r 9/02
U.S. Cl. 174—60 7 Claims



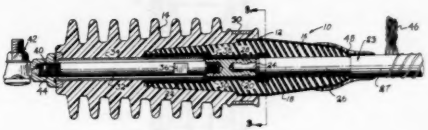
A connecting block in which a support member has a large number of terminal clips extending through the member, for connection of wires to both ends, the support member pivotally mounted in a housing so that one or other side of the support member, and related ends of terminal clips, can be selectively presented for wiring. A hinged cover attached to the support member can be utilized to retain the support member in one selected position, the support member normally positioned in the other position, as by gravity.

3,784,729

ELECTRICAL CABLE CONNECTOR

John P. Davis, Hallsville; Robert W. Harmon, Centralia, and James T. Odom, Glasgow, all of Mo., assignors to A. B. Chance Company, Centralia, Mo.

Continuation-in-part of Ser. No. 20,640, March 18, 1970, abandoned. This application Aug. 23, 1971, Ser. No. 173,837
Int. Cl. H02g 3/00
U.S. Cl. 174—73 R 6 Claims



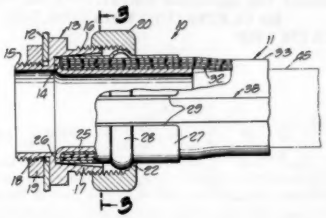
An electrical connector unit has a unitary insulating housing provided with an epoxy resin wheathershed portion integrally united with an elastomeric cable-receiving portion. One embodiment utilizes a polyolefin type solvent dispersed polymer bonding agent to join the two housing portions, while a second embodiment utilizes an epoxy resin band integrally joined with the elastomeric portion during molding of the latter, and an adhesive to bond the weathershed portion to the outer surface of the band. Each embodiment utilizes a retaining ring embedded within the housing to firmly retain components of the connecting structure within the housing once connection has been effected, thereby precluding axial movement of the cable relative to the housing.

3,784,730

COUPLING ASSEMBLY FOR SHIELDED TUBULAR JACKETING

Hans E. Bannies, Laguna Beach, Calif., assignor to Walter A. Plummer, Sherman Oaks, Calif.

Filed Oct. 6, 1972, Ser. No. 295,570
Int. Cl. H02g 15/00
U.S. Cl. 174—75 C 7 Claims

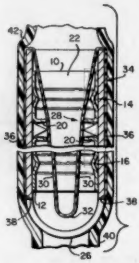


A coupling for connecting a shielded tubular jacket equipped with a re-openable seam to another shielding assembly in a mechanically strong inexpensive and electrically efficient manner. The metal lined jacket is clamped between the tubular metal insert at the end of the jacket and a surrounding annularly beaded sleeve having a split sufficiently wide to accommodate the jacket seam and forcibly contractable about the jacket as the coupling clamping nut is cammed against the annular bead during tightening of the clamping nut. The clamping nut also compresses the tubular insert axially against a threaded metal bushing to complete an electrical bond between the jacket shield and other shielding means for the contents of the jacket.

3,784,731
CONNECTOR FOR INSULATED CONDUCTORS

Thomas Newbold, Lincoln, Mass., assignor to TRW Inc., Cleveland, Ohio

Filed Dec. 4, 1972, Ser. No. 312,008
Int. Cl. H02g *15/08*
U.S. Cl. 174—87 **3 Claims**

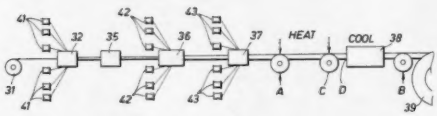


An electrical connector of the composite sleeve type having an inner sleeve carrying a plurality of tangs for piercing insulation and engaging the metal wires of a plurality of electrical conductors inserted into the inner bore in the sleeve to interconnect the conductors responsive to a crimping of the connector includes a liner of thin, filmlike material disposed within the bore in the inner sleeve opposite the distal ends of the tangs. The liner is retained in assembly with the connector by a reversely bent extension thereof which is sandwiched between the outer surface of the outermost metallic sleeve of the connector and the inner surface of the outer insulative jacket of the composite sleeve forming the connector.

3,784,732
METHOD FOR PRE-STRESSING ARMORED WELL LOGGING CABLE

William A. Whitfill, Jr., Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 809,357, March 21, 1969, abandoned. This application Mar. 16, 1971, Ser. No. 124,689
Int. Cl. B29d *23/12*; **H01b** *13/00, 7/22*
U.S. Cl. 174—108 **9 Claims**

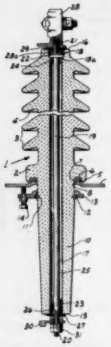


The particular embodiment described herein as illustrative of the invention relates to method and apparatus for use in manufacturing pre-stressed well logging cables. By use of the present invention, the occurrence of undesirable permanent stretch while the cable is in use will be reduced. The method includes the steps of heating the finished cable to a point substantially less than the melting point of the visco elastic, thermoplastic inner conductor insulators but high enough to make the insulators very pliable, and placing the cable under tension sufficient to deform the conductor insulators. The cable is then cooled to a normal ambient temperature while still under tension. Apparatus capable of performing this method is also disclosed.

3,784,733
BUSHING FOR TRANSFORMERS AND THE LIKE

Donald J. Farmer; Charles J. Carlson, both of Pine Bluff, Ark., and Peter W. Muschong, St. Louis, Mo., assignors to Central Moloney Inc., Pine Bluff, Ark.

Filed Mar. 6, 1973, Ser. No. 338,559
Int. Cl. H01b *17/26*
U.S. Cl. 174—153 R **11 Claims**

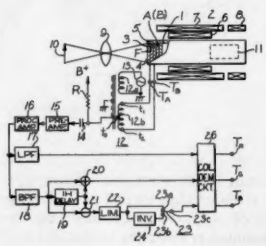


A bushing for a transformer or the like comprising an insulating member having a bore therethrough and an opening adjacent one end thereof intersecting with the bore and including at least one substantially flat side wall portion. The insulating member has a shoulder between said bore and opening. A rigid conductor member extends through the bore and opening and has a pair of threaded ends extending exteriorly of the bore and opening. The conductor member has a flange for abutting engagement with the shoulder and a retainer in threaded engagement between one of the threaded ends thereof and the other end of the bushing urging the flange into engagement with the shoulder. The conductor member carries a pair of spaced seals sealably engaged between the conductor member and the bore and defining therein an isolated chamber.

3,784,734
COLOR IMAGE PICKUP DEVICE

Toshiro Watanabe, and Yasuharu Kubota, both of Kanagawaken, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 12, 1971, Ser. No. 188,029
Claims priority, application Japan, Oct. 14, 1970, 45/90214
Int. Cl. H04n *9/06*
U.S. Cl. 178—5.4 ST **10 Claims**



A color image pickup device of the type in which the image is separated into individual colors by a striped filter and is

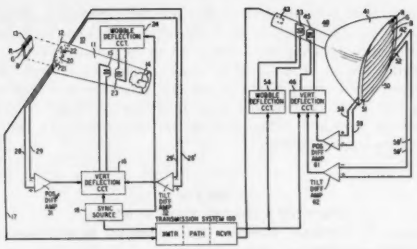
focused on the photoelectric conversion layer of a camera tube. To avoid moire patterns in the reproduced television image, means are provided between the filter and the object being televised to form multiple images of the object spaced apart by an integral multiple of p/N in which $1/N$ is the duty cycle of the color component stripes and p is the pitch of the stripes.

3,784,735

COLOR TELEVISION WITH CONTROL OF A WOBBLING BEAM

Earl Franklin Brown, Piscataway, and William Kaminski, West Portal, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Mar. 29, 1972, Ser. No. 239,269
Int. Cl. H04n 9/24
U.S. Cl. 178—5.4 **6 Claims**



An electron beam is used to scan a striped color pattern arranged parallel to the scan line and the beam is caused to wobble transversely to the scan line so as to impinge on a number of the color stripes during each pass. Sensors located at an edge of the raster but outside the image portion are positioned in pairs — one above and the other below a preselected scan line. Impingement of the scanning beam upon a sensor produces an index signal and the signals from each pair of sensors are applied to opposite inputs of a differential circuit. The resultant difference signal is used to modify the beam deflection system to align the mean scan line with the preselected line so that the proper color information is generated during the entire pass. The technique is useful both in cameras and displays.

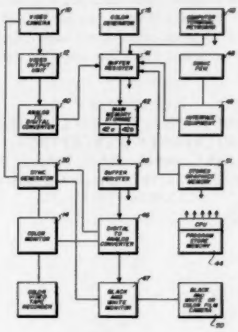
3,784,736

METHOD AND APPARATUS FOR CONVERTING MONOCHROME PICTURES TO MULTI-COLOR PICTURES ELECTRONICALLY

Joseph F. Novak, 447 Ridge Ct., Roselle, Ill.

Continuation-in-part of Ser. No. 181,425, Sept. 17, 1971, Pat. No. 3,706,841. This application Oct. 26, 1972, Ser. No. 300,972
Int. Cl. H04n 9/02
U.S. Cl. 178—5.4 R **8 Claims**

This invention relates to improved methods and apparatus for the conversion of black and white or monochrome pictures to retouched black and white pictures, multicolor video pictures and multicolor film pictures, using high speed and large capacity storage memory units.

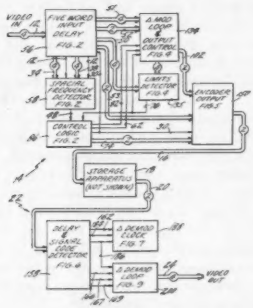


3,784,737

HYBRID DATA COMPRESSION

Glenn C. Waehner, Riverside, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Jan. 12, 1973, Ser. No. 323,155
Int. Cl. H04b 1/66; H04n 1/40, 7/12
U.S. Cl. 178—6 **7 Claims**



A digital video data compression system compresses digital words as small as four-bits into two-bit words by means of a combination of coarse data compression and delta modulation data compression. In response to the two most significant bits being the same for five contiguous words, the apparatus switches into delta modulation mode in which the digital word representing the video brightness (sixteen shades of gray in the four-bit embodiment herein) is incremented or decremented by one level or left unchanged. In the encoder section, a delta modulation loop responds to the delta modulation commands to maintain a digital word of the same value which is created by the same command in the decoder section, and that value is compared with incoming words so as to cause the operation to shift into a coarse mode when the delta-modulated word varies from the incoming word by more than three levels, the two-bit compressed word representing, in the coarse mode, the two most significant bits of the video data word. When in the delta modulation mode, one of the four combinations representable by the two bits is a command to

shift into the coarse mode; when in the coarse mode, a return to the delta mode is effected by sending the signal for pure black (ZERO, ZERO) followed by a signal for pure white (ONE, ONE), since this is a least-likely signal combination to occur. When this combination naturally occurs, it is automatically changed to a lesser shift by sending ZERO, ZERO followed by ONE, ZERO, in order to avoid ambiguity. Clocking, switching, comparing and other functions are disclosed.

3,784,738

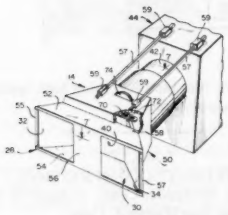
IMAGE REPRODUCTION SYSTEM FOR DIMENSIONAL STEREOPTIC PERCEPTION

Howard Natter, 185 Grandview Blvd., Yonkers, N.Y.

Filed Dec. 21, 1971, Ser. No. 210,348

Int. Cl. H04n *9/56, 9/58*

U.S. Cl. 178—6.5 **5 Claims**



Dual images of the same scene are registered through two viewing stations, the geometric centers of which are spaced apart the average interpupillary distance. An image tube camera receives the images and produces corresponding video signals. In one embodiment, the images are optically juxtaposed to side by side relationship and focused on a photoconductor surface of a single image tube to produce video signals. Receiving stations convert the video signals into two visual side by side images on a CRT. The receiving stations include headgear having spaced apart observation windows, magnifying lenses and means which preclude peripheral visual distraction. An accompanying stereophone acoustical system includes equipment in the headgear to stereophonically reproduce audible sounds in simulation of the sounds associated with the scene. Optionally, the image registered through each viewing station may be focused on the photoconductor surface of an individual image tube to provide separately generated video signals for each viewing station. In this embodiment, the receiving stations include a CRT for each of the generated signals.

3,784,739

APPARATUS FOR ENGRAVING A CYLINDER WITH REPEATED OVERLAPPING PATTERNS

Ferdinand Allard de Vos, Castricum, and Jan Hendrik ter Steege, Breukelen, both of Netherlands, assignors to N.V. Werkspoor-Amsterdam, Amsterdam, Netherlands

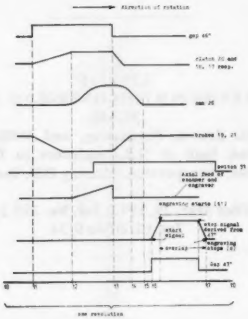
Continuation-in-part of Ser. No. 809,643, March 24, 1969, abandoned. This application Oct. 4, 1971, Ser. No. 185,947

Claims priority, application Netherlands, Apr. 2, 1968, 6804633

Int. Cl. H04n *1/04*

U.S. Cl. 178—6.6 B **17 Claims**

Method and apparatus for controlling the scanning and engraving heads associated respectively with a rotating cylinder having a master pattern thereon and a rotating cylinder on which a half-tone screen printing form pattern of the master is to be produced. The control is such that the heads are intermittently stepped so that the scanning and engraving paths each are in the form of a series of axially spaced incomplete circumferential lines with the end of each such line being joined to the beginning of the next line by a short helical line. Preparation for the subsequent generation of a control signal to stop engraving is effected in response to stepping movement of the heads and the actual stop signal is generated after the stepping movement so that engraving will always actually stop at some point along the next circumferential line while



neither head is moving. Thereafter, further stepping of the engraving head is suspended until the engraving is to be restarted so that the engraving head "idles" along the path on which engraving ceased. The signal to restart engraving is timed to occur immediately prior to the point at which the stop engraving signal occurred so that there is always the slight overlap between stop and restart, and no non-engraved gaps occur between stop and restart.

3,784,740

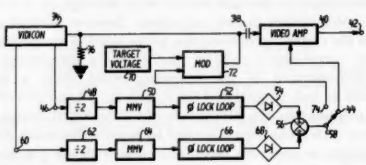
PIPELINE INSPECTION SYSTEM

George V. Copland, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Aug. 23, 1972, Ser. No. 282,906

Int. Cl. H04n *5/19, 7/18*

U.S. Cl. 178—6.8 **6 Claims**



A television inspection system for pipelines wherein the gain of the television camera and/or the camera target voltage is varied in a predetermined manner in synchronism with the scan of the television camera to compensate for nonlinear illumination of the pipeline interior.

3,784,741

CATHODE RAY TUBE DEVICE

Hiroshi Minami; Masao Ando, both of Yokohama, and Yoshiharu Obata, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 19, 1971, Ser. No. 165,420

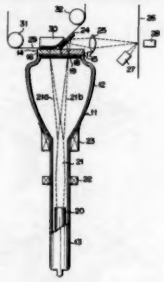
Claims priority, application Japan, July 24, 1970, 45/73478; July 24, 1970, 45/73479

Int. Cl. H04n *5/36*

U.S. Cl. 178—7.88 **5 Claims**

A cathode ray tube device comprising a face plate having a picture transmission glass plate and a picture reception fiber

plate, and a reflector disposed slantwise in front of the glass plate. In picture reception, the medium is traveling in front of the face plate. In picture reading or transmission, however, the



graphic medium is traveling along the side of the face plate. These media are traveling in front and on the side of the face plate in their respective positions independent of each other.

3,784,742

GROUND-BASED FLIGHT SIMULATING APPARATUS

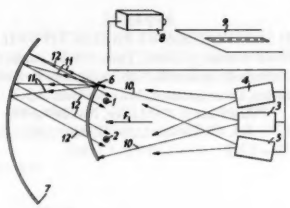
Donald Burnham, Bletchley; Samuel Walter Honeyball, Aylesbury; Archer Michael Spooner, Henley, and Daniel Richard Lobb, Farnborough, all of England, assignors to Redifon Limited, London, England

Filed May 8, 1972, Ser. No. 251,258

Claims priority, application Great Britain, May 12, 1971, 14494/71

Int. Cl. G02b *17/00, 27/10;* **G03b** *21/56*

U.S. Cl. 178—7.88 **11 Claims**



An infinity visual display for a ground-based vehicle or craft simulator. A view of terrain passed over is obtained by a television camera controlled in simulated motion over a terrain model. The view is projected by a television projector onto a back-projection screen, the front of which screen is viewed by trainee crew by way of a collimating mirror. The television projector and back-projection screen are located overhead of the trainee crew and the collimating mirror in front, facing upwards. To provide for this inclined viewing axis of the screen relative to the projector axis to the screen, the screen must have a diffusing transmission characteristic and preferably a ray-deflecting characteristic also.

3,784,743

PARALLEL DATA SCRAMBLER

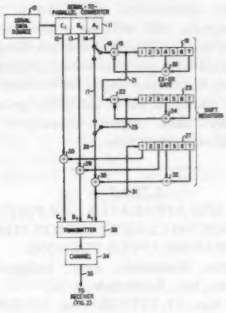
Henry Charles Schroeder, East Brunswick, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 23, 1972, Ser. No. 283,159

Int. Cl. H04l *9/02*

U.S. Cl. 178—22 **10 Claims**

Parallel streams of synchronous binary digital data are scrambled and descrambled with the aid of single complementary pseudorandom key signal generators at the respective transmitting and receiving terminals of a data transmission system. The key signal constructed from a selected one of the parallel streams is applied to the remaining streams after



predetermined differential delays. Where the key signal is generated in a multistage binary shift register, the required differentially delayed signals are readily obtained from different stages thereof.

3,784,744

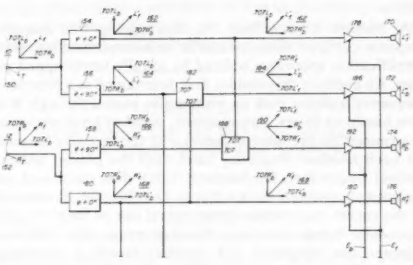
DECODERS FOR QUADRUPHONIC SOUND UTILIZING WAVE MATCHING LOGIC

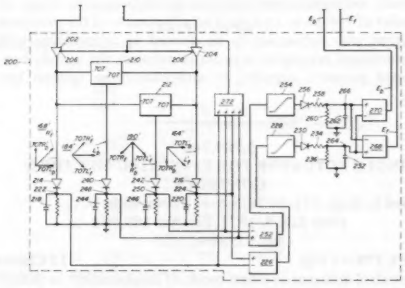
Benjamin B. Bauer, Stamford, Conn., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed Feb. 24, 1971, Ser. No. 118,271

Int. Cl. H04r *5/00*

U.S. Cl. 179—1 GQ **20 Claims**





Apparatus for decoding four separate channels of information transduced from a medium having only two separate tracks and presenting it on four loudspeakers to give the

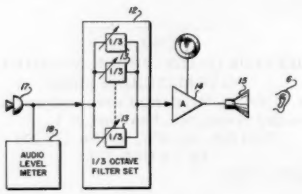
listener the illusion of sound coming from a corresponding number of separate sources. The realism is enhanced by a decoding system which accepts the two outputs from the medium, which may be a disc record, one for each track, separates them into four independent channels each carrying predominantly the information contained in the originally recorded sound signals, and, utilizing a novel wave-matching technique, derives control signals for controlling the gains of amplifiers associated with the four loudspeakers. The use of the wave-matching technique improves the separation of the four independent channels, particularly the generally "front" from the generally "back" signals, thereby to enhance the realism of four-channel simulation.

3,784,745

METHOD AND APPARATUS FOR PROVIDING ELECTRONIC SOUND CLARIFICATION FOR AURALLY HANDICAPPED PERSONS

William P. Stearns, Scottsdale, Ariz., assignor to Shalako Resource Systems, Inc., Scottsdale, Ariz.

Filed Apr. 12, 1971, Ser. No. 133,229
Int. Cl. A61b *5/12;* **H04r** *25/00*
U.S. Cl. 179—1 N **27 Claims**



A method is described for determining the frequency response curve or characteristic to be incorporated into sound amplification apparatus utilized by aurally handicapped persons. An auditory threshold is first determined as a function of frequency utilizing pink or white noise passed through ⅓ octave bandpass filters. Subsequently, comfort level response is determined (in the same manner) with the loudness increased for each nominal frequency band until the patient indicates distinct discomfort, the loudness being then decreased until the patient considers the level to be comfortable. Examination of the curves thus obtained may reveal one or more ⅓ octave frequency bands at which dynamic range, the difference between the threshold and comfort levels, is abnormally reduced. Playback apparatus is then adjusted generally to conform to the comfort level curve. Preferably, these tests and the playback apparatus comprehend a broad frequency range on the order of 100 hz to 10 kHz. The adjustment of the playback apparatus may subsequently be altered in accordance with predetermined principles in order to enhance the aurally handicapped person's capacity to understand the spoken language.

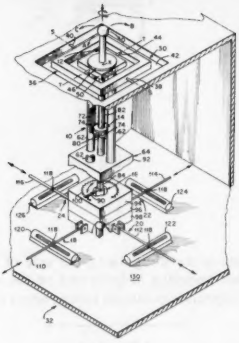
3,784,746

SINGLE ACTUATOR FOR EFFECTING MULTIPLE CONTROLS

Richard L. Hess, 111-31 78th Ave., Forest Hills, N.Y.

Filed July 6, 1971, Ser. No. 159,988
Int. Cl. H04r *5/00*
U.S. Cl. 179—1 GQ **12 Claims**

A control actuator in a first mode of displacement is shifted longitudinally along a predetermined axis to effect a first form of control to blend the sound for a stereo high fidelity sound system. In a second mode of displacement the actuator is rotated about the predetermined axis to effect a second form of control to vary the volume or loudness level of the stereo high fidelity sound system. In a third mode of displacement the actuator is either shifted to a position wherein it is inclined with respect to the predetermined axis, or as that its axis is shifted so as to be parallel with the predetermined axis, to effect a third form of control to arrange the stereo image or balance presented by the high fidelity sound system. The actuator is furthermore displaceable in a multiple mode including any two or even all three of the aforementioned modes to simultaneously effect the forms of control.

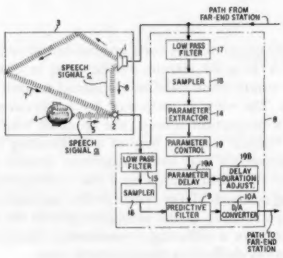


3,784,747

SPEECH SUPPRESSION BY PREDICTIVE FILTERING

David Arthur Berkley, New York, N.Y., and Olga Mary Mracek Mitchell, Summit, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 3, 1971, Ser. No. 204,509
Int. Cl. H04m *1/20;* **H04b** *15/00*
U.S. Cl. 179—1 HF **11 Claims**

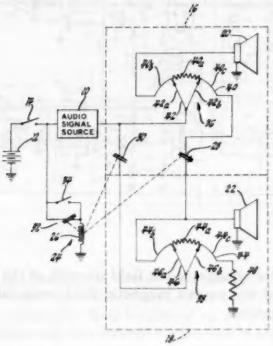


Speech signal energy from an undesired source is suppressed by extracting from the undesired signal a delay parameter and a gain parameter. These parameters control a delay and gain network through which both the desired and undesired signals are routed. The delayed, amplified signal, when applied to a subtractor along with the undelayed signal, suppresses the undesired signal. The invention is applied to several hands-free telephony situations and to the suppression of one of two speakers in a room.

3,784,748
AUTOMOTIVE VEHICLE SOUND DISTRIBUTION SYSTEM

Donald E. Brinkerhoff, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 19, 1972, Ser. No. 218,975
Int. Cl. H04r *5/02*
U.S. Cl. 179—1 VE **1 Claim**

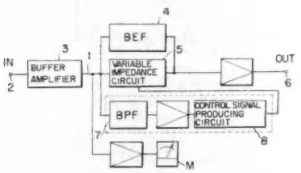


In a sound distribution system for an automotive vehicle, a relay is manually operable to shift control over the sound level of a rear seat speaker from a front seat fader exclusively to a rear seat fader exclusively. Further, a limiting resistor is connected to the rear seat fader to prohibit unloading of the audio signal source of the sound distribution system.

3,784,749
NOISE ELIMINATING DEVICE

Shogo Shigeyama, Kawasaki; Yoichiro Yamada, Yokohama, and Kunihiro Kondo, Urawa, all of Japan, assignors to Trio Kabushiki Kaisha, Tokyo-To, Japan

Filed Feb. 9, 1972, Ser. No. 224,790
Claims priority, application Japan, Feb. 10, 1971, 46/5361
Int. Cl. H04b *15/00*
U.S. Cl. 179—1 P **8 Claims**

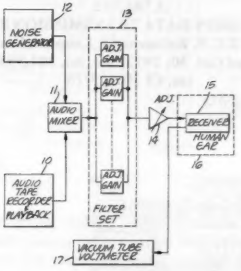


In a noise reducing device for reducing noises contained in audio signals, a frequency band wherein noises contained in audio signals are highly sensible to an auditor, but the frequency of appearance therein of the audio signals is substantially low is blocked by a required number of band-elimination filters provided in series in a transmission line for transmitting the audio signals, each of the band-elimination filters being bypassed by a corresponding variable impedance circuit, while the same frequency band is passed through a corresponding number of band-pass filters, the outputs of said band-pass filters being supplied respectively to corresponding control signal producing circuits to produce control signals, whereby said variable impedance circuits bypassing the band-elimination filters are controlled respectively by said control signals, and the band-elimination filters are thereby brought into a state effectively blocking the frequency band when the input audio signal level in said frequency band is lower than a predetermined value and vice versa.

3,784,750
APPARATUS AND PROSTHETIC DEVICE FOR PROVIDING ELECTRONIC CORRECTION OF AUDITORY DEFICIENCIES FOR AURALLY HANDICAPPED PERSONS

William P. Stearns, Scottsdale, and John K. Lauchner, Phoenix, both of Ariz., assignors to Shalako Resource Systems, Inc., Scottsdale, Ariz.

Filed Feb. 25, 1972, Ser. No. 229,322
Int. Cl. H04r *29/00*
U.S. Cl. 179—1 N **6 Claims**



There is disclosed herein improved methods and apparatus for measuring and describing auditory deficiencies for purposes of prescribing compensatory amplification, and improved methods and apparatus for providing such compensatory amplification in a prosthetic device in practical wearable form, and particularly electronic circuits which may be used both in measuring and correcting such deficiencies.

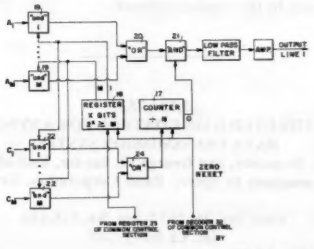
ERRATA

For Classes 235—61 and 235—88 see:
Patents Nos. 3,784,789 thru 3,784,797

3,784,751
PDM-TDM SWITCHING MATRIX

Robert C. Arndt, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 16, 1971, Ser. No. 199,177
Int. Cl. H04j *3/04*
U.S. Cl. 179—15 A **7 Claims**



A switching matrix for making electrical connection between any one of a number of input lines and any one of a

number of output lines. The signal to be switched will be on one of the input lines. This signal first modulates a carrier signal and then is multiplexed with the other input signals in an input subsection into a single signal stream. Several streams may be present, dependent on the total number of inputs, as the number of inputs in a subsection is limited. These signal streams are then fed to each output subsection. Each output subsection has one output line. The desired output line is first selected, thus selecting an associated output subsection. At the output subsection, that particular signal stream containing the desired input signal is first selected from all the streams available. The one desired input signal is then selected from all the signals available in the stream, and subsequently appears on the desired output line.

3,784,752

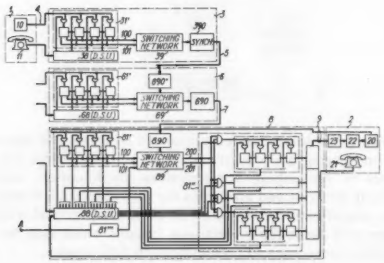
TIME DIVISION DATA TRANSMISSION SYSTEM

Roger J. Peron, Z.U.P. Batiment 63, Lannion, France

Filed Oct. 30, 1972, Ser. No. 301,995

Int. Cl. H04j *3/16*

U.S. Cl. 179—15 AQ **2 Claims**



Data transmission system over routes composed of a chain of cascaded time division switching networks and through a number of time slots depending upon the data flow and selected by the data transmitter station. The message data to be transmitted are chopped into as many words as there are transmission time slots. The transmitting routes are defined by the incoming slots in the home time division exchange of the transmitter station and the outgoing slots in the home time division exchange of the receiver station. The slot numbers of the incoming and outgoing slots are stored together with the chronological numbers of establishment of the routes through said slots. Reception of the message words takes place in groups of shift registers whose number is equal to the number of time slots and selectively in a particular shift register of said register groups depending upon the delay encountered in the transmission by the word considered.

3,784,753

MULTIPLEXED GAIN CONTROL FOR A SYNCHRO DATA TRANSMISSION SYSTEM

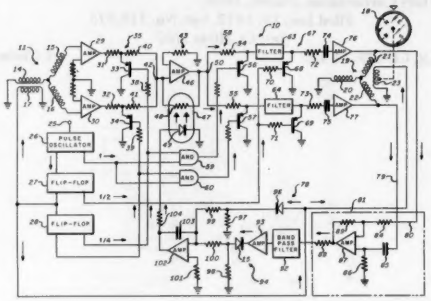
James R. Erspamer, and George W. Snyder, both of Phoenix, Ariz., assignors to Sperry Rand Corporation, Great Neck, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,144

Int. Cl. H04j *7/00*

U.S. Cl. 179—15 FE **10 Claims**

A synchro data repeater system is provided with a proportional gain control for compensating for undesirable transmitter signal amplitude variations, the system being particularly adapted for application in magnetic compass systems to



compensate for changes in the field strength of the horizontal component of the earth's magnetic field, especially in high latitude navigation.

3,784,754

APPARATUS AND METHOD FOR TRANSMITTING AND RECEIVING SIGNALS BASED UPON HALF CYCLES

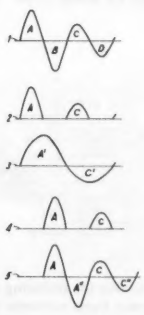
Isamu Hagiwara, 3-1-17, Katamachi, Fuchi-shi, Tokyo, and Shiro Okamura, 1494 Jindaijimachi, Chofu-shi, Tokyo, both of Japan

Filed Feb. 23, 1972, Ser. No. 228,643

Claims priority, application Japan, Feb. 23, 1971, 46/8831

Int. Cl. H04b *1/66*

U.S. Cl. 179—15.55 R **19 Claims**



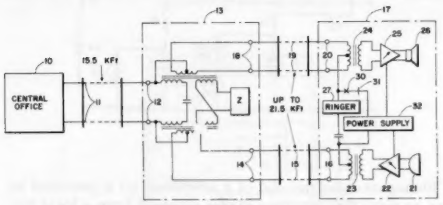
Selected portions of an input signal are sampled. Preferably, the portions not sampled are redundant with respect to the sampled portions. This is true if, for instance, the sampled portions are half cycles of a sound wave. The sampled information can be distributed over the time intervals occupied by the sampled and the not sampled portions of the input wave to produce a coded signal having a lower frequency than the original wave. This process can be reversed to substantially reproduce the original wave.

3,784,755

LONG-LINE TELEPHONE CIRCUIT

Ronan M. Cambridge, and Milan Chytil, both of Ottawa, Ontario, Canada, assignors to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada

Filed Sept. 7, 1971, Ser. No. 178,198
Int. Cl. H04b 1/52; H04m 1/60
U.S. Cl. 179—16 F 4 Claims



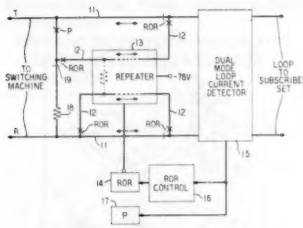
A long-line telephone circuit which utilizes a combination of two-wire and four-wire transmission to advantage in order to achieve subscriber loop lengths of up to 36,000 feet from a central office with less overall conductive material (i.e. finer gauge wire) than is currently used and without the necessity of employing loading coils in the lines.

3,784,756

SUBSCRIBER LOOP RANGE EXTENDER

Joseph Michael Nemchik, Lake Hiawatha, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 15, 1972, Ser. No. 315,489
Int. Cl. H04g 1/30
U.S. Cl. 179—16 F 7 Claims



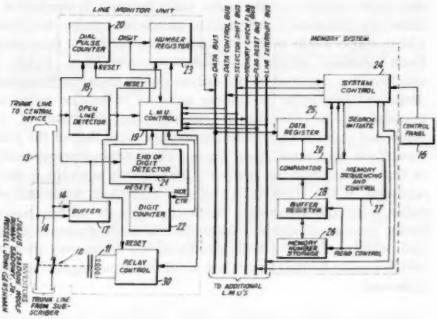
This disclosure relates to a range extender having a through transmission path, a voice transmission path including a repeater, a relay for transferring back and forth between paths and a dual mode, loop current detector. In the idle state, the current detector is in a "slow" mode for the purpose of preventing (spurious) operation of the detector, except in response to an off-hook current flow. The transfer relay connects the repeater to the loop immediately after an off-hook is detected and the current detector is switched to its "fast" mode in preparation for dialing pulsing. The repeater normally remains connected to the loop for the duration of the call, even over dial pulsing. Dial pulsing is therefore repeated via the repeater, and not shunt aided. The dial pulses are detected by the fast current detector and the office loop is opened and closed through the repeater, which, from the office side, looks like a low resistance (1K) to low frequencies.

3,784,757

LIMITED ACCESS DIALING SYSTEM

Julius Isadore Woolf, Teaneck, N.J.; Roman Sadowy, Jr., New York, N.Y., and Russell John Gershman, Englewood Cliffs, N.J., assignors to Information Flow Incorporated, in care of Ocean & Atmospheric Science Inc., Dobbs Ferry, N.Y.

Filed June 14, 1971, Ser. No. 152,538
Int. Cl. H04m 1/66
U.S. Cl. 179—18 DA 38 Claims



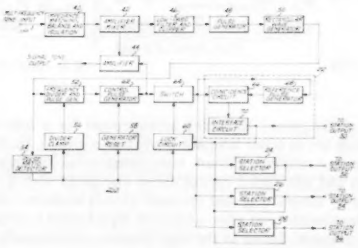
A limited access dialing system having a plurality of line monitors each connected in parallel to a separate trunk line to be monitored and communicating through parallel lines to a central memory system containing a list of authorized telephone numbers. The line monitor unit counts the pulses of each digit and stores the digits in a number register. It determines if an area code has been dialed and if a leading "1" has been dialed and accommodates for them. The central memory system sequentially interrogates the line monitors until it finds one which is storing a number in its registers. It then stops interrogating and checks the number stored against the authorized list. If the number is authorized the line monitor is reset and the sequential interrogating is resumed. If the number is not authorized, the trunk line is interrupted before resetting. The numbers in the list can be updated by entering or removing numbers through a control panel.

3,784,758

PULSE RATIO DETECTOR

Alexander Charles McIntosh, Redmond, and Maurice Irvin Smith, Kirkland, both of Wash., assignors to Tel-Tone Corporation, Kirkland, Wash.

Division of Ser. No. 867,788, Oct. 20, 1969, Pat. No. 3,636,270. This application May 27, 1971, Ser. No. 147,621
Int. Cl. H04b 1/10
U.S. Cl. 179—84 VF 3 Claims



A frequency detection system provides a distinct output for each sinusoidal input signal represented by a selected frequen-

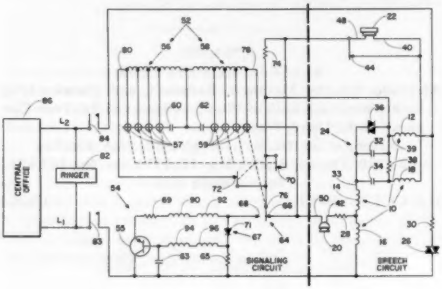
cy or combination of frequencies appearing on a common transmission line. Included are a frequency detector and a plurality of station selectors. The frequency detector comprises circuitry converting any input signal into a rectangular wave whose frequency and wave shape are related to that of the input signal. The rectangular wave is applied to a pulse ratio detector whose output normally blocks the rectangular wave from the frequency detector's output. When a legitimate sinusoidal input signal is being received, as distinguished from noise, the rectangular wave has a unity ratio of positive-negative pulse widths and the pulse ratio detector is operative to allow the frequency detector to produce a pulse waveform whose pulse width is directly related to the input frequency. Each station selector initiates a reference pulse in synchronism with one of the output pulses from the frequency detector. The pulse waveform and the reference pulse are coupled to a coincidence circuit. The duration of the reference pulse is chosen to correspond with that of the pulse waveform, if an input signal having a frequency corresponding to that established for the particular station selector is being received. If the termination of the reference pulse and the pulse from the frequency detector coincide within narrow limits, an output signal is provided to station output device and additionally to a lock circuit in the frequency detector which blocks further operation until the input signal has been removed.

3,784,759

TELEPHONE SUBSTATION APPARATUS

William John Haight, and John Edward Critchley, both of London, Ontario, Canada, assignors to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada

Filed Apr. 17, 1972, Ser. No. 244,528
Int. Cl. H04m *1/50*
U.S. Cl. 179—84 VF **8 Claims**



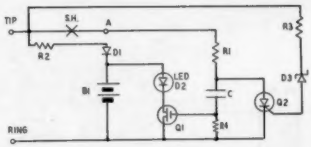
A multifrequency signalling arrangement for a subscriber telephone set or other telephone substation circuit. In this arrangement a resonant circuit, comprising a pair of tapped inductors and associated capacitors, is energized with a direct current by connecting said resonant circuit in series with the voice transmitter unit after a selected digit button is actuated. Other contacts, linked to the digit buttons, subsequently enable an amplifier which forms part of the multifrequency oscillator, and still later interrupt the flow of direct current through the resonant circuit to initiate oscillations in said resonant circuit at the selected frequency.

3,784,760

TELEPHONE SET ILLUMINATION CIRCUIT

Richard Michael Rickert, Indianapolis, Ind., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 15, 1972, Ser. No. 253,501
Int. Cl. H04m *1/22*
U.S. Cl. 179—90 L **10 Claims**



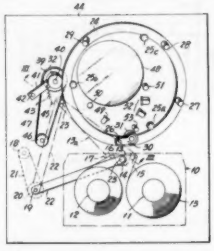
Illumination for the dial of a telephone set is provided by one or more light-emitting diodes powered from a local battery. Battery power is maintained at an operative level by applying a constant trickle charge from the line. To conserve the battery, the light source is energized only when the set goes off-hook – and then, only for a timed interval.

3,784,761

TAPE AUTO-LOADING RECORDING AND REPRODUCING APPARATUS

Norishige Moritan, Sagamihara; Ikuro Moriya, Zushi; Junichi Ura, and Makoto Koono, both of Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama City, Japan

Filed Apr. 21, 1972, Ser. No. 246,301
Claims priority, application Japan, Apr. 24, 1971, 46/26438; June 5, 1971, 46/39558; June 6, 1971, 46/39559; June 5, 1971, 46/47217 (utility model)
Int. Cl. G11b *15/66, 23/04*
U.S. Cl. 179—100.2 ZA **8 Claims**



A tape auto-loading recording and reproducing apparatus comprises means for drawing tape from the interior of a cassette to the outside, through a tape guide member which enters the loop of the tape thus drawn out. As the guide is about to pass through this loop, it engages the tape and pulls it around. A rotating ring-shaped member provided with this tape guide member is adapted to rotate while surrounding a guide drum and, moreover, with an inclination. The tape drawn out of the cassette is pulled around by the tape guide member together with the rotation of the ring-shaped member and is loaded in a predetermined tape travel path, including a passage wherein the tape is caused to contact the guide drum over a specific range of angle.

3,784,762

AUTOMATIC TUNER DRIVE DEVICE APPLICABLE TO RADIO RECEIVERS WITH AN INCORPORATED MAGNETIC TAPE OR WIRE RECORDER AND/OR PLAYER

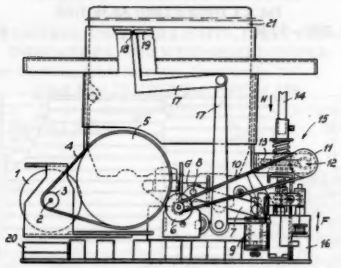
Renato Seregni, Cascina Emanuela, Solaro, Italy

Filed Sept. 18, 1972, Ser. No. 290,054

Claims priority, application Italy, Sept. 28, 1971, 29194 A/71

Int. Cl. G11b 31/00; H04b 1/32; H03j 3/00

U.S. Cl. 179—100.11 1 Claim



An automatic tuner drive device applicable to radio receivers with an incorporated magnetic tape or wire recorder and/or player comprising pulleys arranged to cause the movement or rotation of the tuner unit, and connected to a a roller by means of an elastic endless belt. The roller is driven by any rotating member of the recorder and/or player unit.

3,784,763

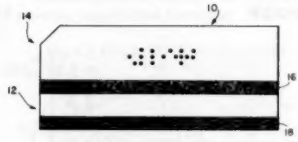
UNIVERSAL RECORDING CARD

Charles R. Budrose, Melrose, Mass., assignor to Bio-Dynamics, Inc., Cambridge, Mass.

Filed Apr. 26, 1971, Ser. No. 137,319

Int. Cl. G11b 5/80, 21/04, 23/18

U.S. Cl. 179—100.2 MD 5 Claims



A card is provided with at least two recording sections on which an audio generated signal is recorded. The audio generated signal is recorded on one section in a first direction at a first rate and is recorded on the other section in a second direction at a second rate. The audio generated signal is recorded simultaneously on each section by means of a recording device having at least two recording heads. Each recording head is mounted on a slidable platform and each platform is operatively connected to a driver in such a way that one head is driven in the first direction at the first rate and the other head is driven in the second direction at the second rate.

3,784,764

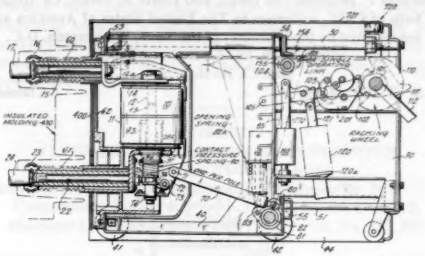
RACKING MECHANISM FOR DRAW-OUT TYPE MINIATURE HIGH VOLTAGE CIRCUIT BREAKER

George A. Wilson, Pineville, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Aug. 21, 1972, Ser. No. 282,319

Int. Cl. H01h 9/20, 33/42

U.S. Cl. 200—50 AA 23 Claims



Miniaturized modular high voltage truck mounted switchgear in which circuit interrupter elements on a frame are movable with respect to a truck frame and the truck frame is itself removably mounted in a cubicle in a switchboard. The circuit interrupter elements may then be racked into a connected position with respect to busses in the switchboard and may also be racked out. The circuit interrupter elements, when racked out, telescope with the operating elements of the truck mounted frame; the connection between the operating elements of the truck mounted frame and the circuit interrupter elements includes a link which is pivotally mounted on a driving member carried by the truck and hingedly connected to the circuit breaker elements. This link may swing into the region of the operating members mounted on the truck and may swing away therefrom, to permit the telescoping of the frame which carries the circuit interrupter elements into the truck frame. Racking mechanism is provided which will move the frame carrying the circuit interrupter elements with respect to the truck. The racking mechanism may be motor driven or manually driven and is mounted on the truck frame. Interlocks are provided between the truck frame and the cubicle in the switchboard not only to anchor the truck frame in the switchboard but to ensure that racking out will occur only under an open condition of the interrupter breakers and that auxiliary contacts will be disengaged before any removal of the truck.

3,784,765

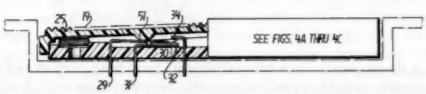
MANUALLY ADJUSTABLE MULTIPOSITION SWITCH

John Patrick Daly, Maitland, Fla., assignor to Scope Incorporated, Reston, Va.

Filed Sept. 20, 1972, Ser. No. 290,571

Int. Cl. H01h 3/20

U.S. Cl. 200—5 R 10 Claims



A switch within a housing having a plurality of fixed contacts within the housing. A plurality of movable contacts are located within the housing and are spring biased away from the one set of fixed contacts and in contact with another set of

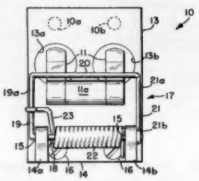
fixed contacts. The movable contacts may be selectively positioned manually. Manual pressure exerted to overcome the spring bias causes mating of selected movable contacts with the fixed contacts. Terminals extend from the fixed contacts outwardly of said housing so as to provide means for connecting the switch to various electrical circuits.

3,784,766

POSITIVE LOCK TOGGLE GUARD

Norman F. Johnson, San Diego, and Elmer R. Smith, La Mesa, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 9, 1973, Ser. No. 330,939
Int. Cl. H01h *27/00*
U.S. Cl. 200—42 T **4 Claims**



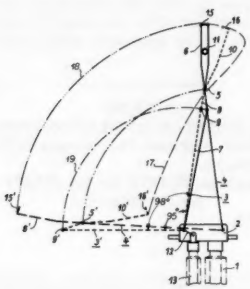
A toggle switch has a uniquely configured bail spring-biased in-place which allows one-handed operation while positively preventing the accidental actuation of the switch. Separate, oppositely directed motions by an operator to remove the bail and to displace the toggle lever ensure against the accidental actuation of the switch. By its simplicity of design the toggle lock guard is capable of being mass produced at minimal cost to provide a markedly high degree of reliability.

3,784,767

DISCONNECT SWITCH

Winfried Oltersdorf, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munchen, Germany

Continuation of Ser. No. 117,928, Feb. 24, 1971, abandoned.
This application Dec. 29, 1972, Ser. No. 319,785
Int. Cl. H01h *31/34*
U.S. Cl. 200—48 V **4 Claims**



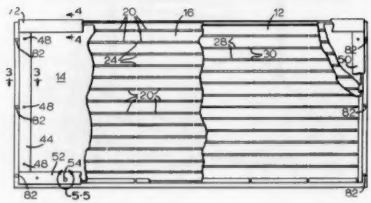
A disconnect switch has a stationary switching portion and a movable switching portion movable between open and closed positions. The movable switching portion has a rigid first member and a second member joined to the first member at a first pivot. The second member has two rigid parts mutually joined at a second pivot. These pivots permit the members of the movable switching portion to be foldable to one side of the stationary switching portion when the movable switching portion is in the open position. The members have respective contact jaws for grasping the stationary switching part when the movable switching portion is in the closed position. The contact jaws have a length approximately half the length of the members and the second pivot divides the two parts of the second member in a length ratio in the range of 1 : 3 to 1 : 6.

3,784,768

SUBMERSIBLE TOUCH-OPERATED SIGNALER WITH FLUID DRAINAGE PASSAGES

Theodore R. Hunt, Aloha, Oreg., assignor to Data Time, Inc., Portland, Oreg.

Filed Feb. 28, 1972, Ser. No. 229,782
Int. Cl. H01h *35/00*; **A63k** *3/00*
U.S. Cl. 200—52 R **6 Claims**



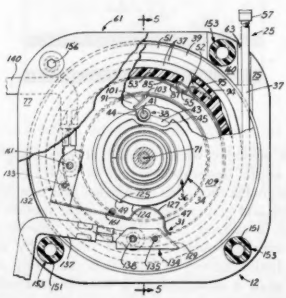
A submersible, touch-operated signaler including at least a pair of facially confronting, electrically conductive plates. Strips of resilient, non-conductive material are interposed between the plates to maintain a substantially preset spacing therebetween and yieldably resist movement of the plates toward each other. The strips are disposed in a plurality of spaced rows with vertical fluid-draining passages therebetween. Rigid strips along adjacent margins of the plates secure the edges of the plates against movement away from each other. These rigid strips have openings extending therethrough which align with the vertical passages between the resilient strips to provide free fluid flow into and out of the space between the plates.

3,784,769

SEAT SENSOR SAFETY SYSTEM WITH IMPROVED SWITCH SENSOR CONTAINING SLIP CLUTCH COUPLING MEANS

Medard Z. Bryll, Palos Park, Ill., assignor to Gateway Industries, Inc., Chicago, Ill.

Filed Dec. 7, 1972, Ser. No. 312,818
Int. Cl. H01h *35/00*
U.S. Cl. 200—52 R **12 Claims**



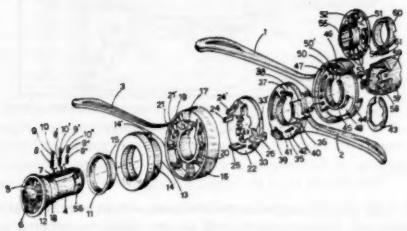
A seat sensor detects occupancy of a vehicle seat upon initial deflection of a portion of the seat caused by seating or

removal of a predetermined weight. A seat follower is operable through a coupling means which comprises a slip clutch to operate a switch actuator means in the form of a turnable cam to actuate a switch means after a predetermined extent of seat deflection in either the upward or downward directions irrespective of the total deflection or the initial reference point for the deflection. The cam is limited to a short turning movement and the slip clutch allows the seat follower to continue to travel with additional seat deflection. The preferred seat follower is a cable wound on a reel, and the slip clutch comprises one clutch face on the reel and another clutch face on the cam.

3,784,770
CONTROL UNIT FOR LIGHTS, DIRECTION INDICATORS, AND WINDSHIELD-WIPER

Giuseppe Codrino, Viale Stazione, Quattordio, Italy

Filed June 20, 1972, Ser. No. 264,542
Int. Cl. H01h *3/18*
U.S. Cl. 200—61.36 **8 Claims**

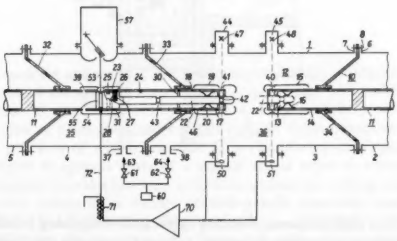


An improved control unit for lights-direction indicator-windshield wiper for a motor car wherein the direction indicator is constructed to maintain, after acutation of the indicator, the respective indicator light turned on to indicate the turn the car will make, even if the steering wheel should be turned slightly in opposite direction, until the wheels of the car are moved back to the normal driving position.

3,784,771
HIGH-VOLTAGE PISTON ACTUATED SWITCH WITH ROTATIONAL SYMMETRY AND LIGHT BEAM INDICATING MEANS

Willi Olsen, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed July 20, 1972, Ser. No. 273,611
Claims priority, application Germany, July 29, 1971, P 21 38 456.5
Int. Cl. H01h *35/38, 33/30, 33/64*
U.S. Cl. 200—82 B **15 Claims**

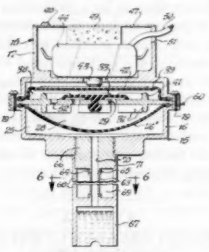


A metal-clad, high-voltage switchgear assembly is disclosed for an electrical conductor wherein the rotational symmetry of the electric field of the conductor is maintained. The switchgear assembly has a metal enclosure containing the conductor arranged to extend along the axis of the enclosure. The conductor is supported with respect to the enclosure by disc-shaped insulators that partition the enclosure into fluid-tight compartments separated from each other. A disconnect switch is arranged at a gap in the line of the conductor , the gap being defined by mutually adjacent end portions of the conductor. The switch includes a cylinder formed in one of the end portions of the conductor so as to define a cylinder chamber that communicates with the compartments. A piston switching member is slideably mounted in the cylinder and moves to mutually connect and disconnect the end portions of the conductor in response to changes in fluid pressure in the compartments.

3,784,772
FLUID PRESSURE ACTUATED SWITCH WITH PRESTRESSED DIAPHRAGM

James E. Nelson, 36 Lehn Springs Dr., Williamsville, N.Y.

Continuation-in-part of Ser. No. 18,673, March 11, 1970, abandoned. This application Oct. 7, 1971, Ser. No. 187,391
Int. Cl. H01h *35/34*
U.S. Cl. 200—83 Y **8 Claims**



A fluid pressure responsive switch including a housing, a fluid inlet in the housing, a partition member in the housing, a first diaphragm effectively positioned between the fluid inlet and the partition member to define a first chamber between the partition member and the first diaphragm, a switch member on the housing, a second diaphragm effectively positioned between the partition member and the switch member and defining a second chamber between the partition member and the second diaphragm, a plurality of apertures in the partition member for effecting communication between the first and second chambers, a single flapper valve member attached to the partition for normally preventing communication between the first and second chambers, said first diaphragm being deflected upon the sensing of fluid pressure from an external source by said first diaphragm to cause fluid to be moved from said first chamber to said second chamber through said plurality of apertures, and bleed aperture means in the partition member for permitting bleeding of fluid from the second chamber to said first chamber after said external fluid pressure is no longer sensed and said flapper valve member is closed, said second diaphragm actuating said switch means upon the movement of fluid into said second chamber. The first diaphragm can be prestressed as desired during fabrication so as to vary the sensitivity of the switch.

The present invention relates to an improved fluid pressure actuated switch and more particularly to a switch of this type for use in conjunction with laundry tubs which are located below sewer line level, and also for use in other applications where fluid pressures are to be measured.

3,784,773

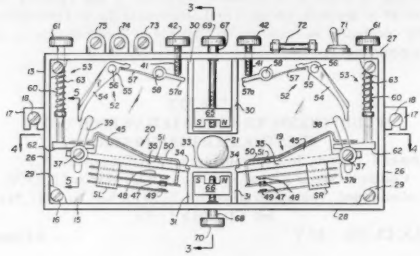
TRAILER ANTI-FISHTAIL ACCELERATION RESPONSIVE SWITCH ASSEMBLY WITH ACTUATOR MAGNETIC HOLDING STRUCTURE

Arthur R. Jubenville, deceased, late of 20 Grist Mill Ln., Halesite, N.Y., by Irene L. Jubenville, Administratrix

Division of Ser. No. 80,834, Oct. 15, 1970, Pat. No. 3,715,003. This application Nov. 28, 1972, Ser. No. 310,171

Int. Cl. H01h *35/14*

U.S. Cl. 200—61.45 M **5 Claims**



A towed vehicle anti-fishtail control system in which a ferromagnetic ball functions as an acceleration sensing body and is movable in response to lateral acceleration of the towed vehicle, from a central rest position to either side relative to the inclined branches of a path provided by ramp assembles which preferably are movably mounted. Magnetic apparatus is providd for adjustably biasing the ball to hold it in its rest position. Movement of the ball along either path branch results first in actuation of a warning device and then actuation of the towed vehicle's brakes. Apparatus is also disclosed for releasably trapping the ball at either extremity of its path.

3,784,774

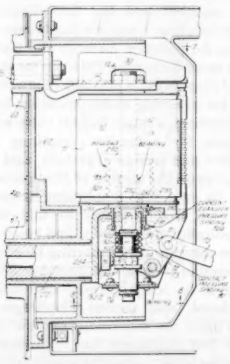
VACUUM CIRCUIT BREAKER CURRENT TRANSFER AND ACTUATION

George A. Wilson, Pineville, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Aug. 21, 1972, Ser. No. 282,339

Int. Cl. H01h *33/66*

U.S. Cl. 200—144 B **5 Claims**



A vacuum circuit breaker having a movable contact carrying rod extending outside the circuit breaker through a vacuum tight seal. The rod is positioned in a pair of spaced bearings with a bushing floatingly mounted on the rod between the bearings. The contact rod is driven by the bushing through a spring connected between the bushing and a spring bearing element on the rod in order to provide for overtravel of the drive mechanism connected to the bushing after the movable contact engages a complementary contact. Additional elements may be connected to said contact rod.

3,784,775

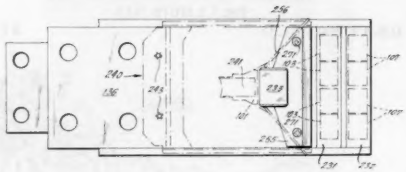
ARC RUNNER BETWEEN STATIONARY CONTACTS

Carl E. Gryctko, Haddon Heights, N.J., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed July 27, 1972, Ser. No. 275,523

Int. Cl. H01h *33/12*

U.S. Cl. 200—146 R **9 Claims**



A high current capacity molded case circuit breaker having arcing and main contacts and an arc chute to receive and extinguish arcs drawn between the arcing contacts is provided with a magnetic arc runner disposed between the stationary sections of the main and arcing contacts to direct arcs that initiate at the stationary main contact onto the stationary arcing contact.

3,784,776

ELECTROMAGNETIC LOCKING MECHANISM FOR A MICROWAVE OVEN

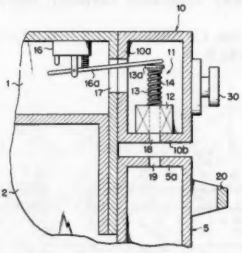
Kazuyoshi Asanuma, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Apr. 14, 1971, Ser. No. 133,840

Claims priority, application Japan, Apr. 20, 1970, 45/37606 (utility model); Apr. 20, 1970, 45/37607 (utility model)

Int. Cl. H05b *9/06*

U.S. Cl. 219—10.55 **8 Claims**



In a high frequency heating apparatus comprising a cabinet defining a heating chamber, a door for closing the heating chamber, a high frequency oscillator, and a timer for presetting the operating time of the oscillator, there are provided an electromagnetic locking mechanism which is ener-

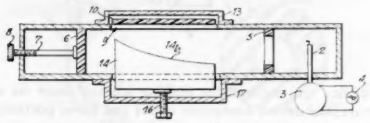
gized together with the timer for locking the door in the closed position. Also provided is a switch operated by the locking mechanism for controlling the operation of the high frequency oscillator to deenergize the high frequency oscillator when the door is unlocked.

3,784,777

MICROWAVE FURNACE FOR THE TREATMENT OF SHEETS OR PLATES MADE OF A MATERIAL ABSORBING SAID WAVES

Joel Henri Auguste Soulier, 66 Chaussee Jules Cesar, Eaubonne, France

Filed Dec. 22, 1971, Ser. No. 210,801
Claims priority, application France, Dec. 31, 1970, 7047567
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **21 Claims**



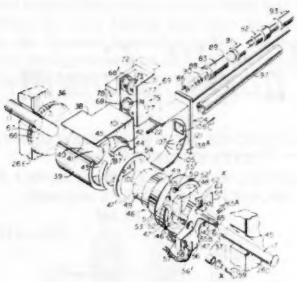
A microwave furnace comprises a guide with a slot of a length corresponding to the width of a sheet which is to be treated by being continuously moved through the guide. A microwave generator is electrically connected to said guide and at least one metal plate is placed in front of said slot.

3,784,778

METHOD AND APPARATUS FOR T. I. G. TUBE WELDING

Neil Freeman McPherson, Oakville, Ontario, and Nils Hansmann, Ancaster, Ontario, both of Canada, assignors to Atomic Energy of Canada Limited, Ontario, Canada

Division of Ser. No. 782,370, Dec. 9, 1968, Pat. No. 3,621,177. This application Mar. 29, 1971, Ser. No. 128,984
Int. Cl. B23k *9/02*
U.S. Cl. 219—60 A **18 Claims**



A method and apparatus for fully automatically weldjoining lengths of metal instrument tubing employs the TIG welding process to advance a weld puddle about the periphery of the junction of butted aligned ends of straight tubing, respective end portions of which are held in a closed chamber rigidly clamped in spaced seats of a robust metal head to compel elongation into the junction as heat flows into the tubing ends; the unit comprises a handle portion axially separably joined with the head, providing drive to rotate an electrode carrier spool about the work angular interval marking signals being transmitted to a remote control unit from which welding current is supplied to the refractory electrode and gas to the head chamber and tubing interior.

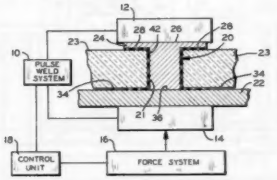
A welding cycle commences with a stationary arc developing a weld pool, causing expansion sealing the junction, followed by advance at uniform speed with controlled current levels, the arc being sustained beyond 360° and the complete cycle spanning two revolutions and terminating with a bead-cooling gas flow. Repeatable welds of high quality on a production basis may be obtained, characterized by minimal fall-in of bead, full area fusion of faces, and constant internal diameter.

3,784,779

ARTICLE INCLUDING A WELD JOINT IN CLOSE PROXIMITY TO A FRAGILE OR THERMALLY SENSITIVE ELEMENT AND METHOD OF MAKING THE SAME

Daniel A. Schaitberger, Grosse Pointe Park, Mich., assignor to Quanta Welding Company, Troy, Mich.

Filed Jan. 17, 1972, Ser. No. 218,091
Int. Cl. B23k *9/00*
U.S. Cl. 219—117 **22 Claims**



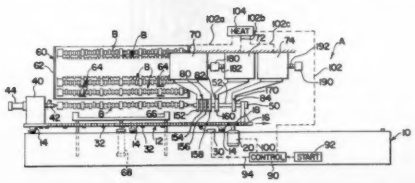
An assembly of at least two metal elements and at least a third fragile and/or heat sensitive elements utilizing a solid state resistance weld between the metal elements made in close proximity to the third element in a manner to avoid mechanical and thermal deterioration or stresses. Typicaly a hinge mounting for a glass window is comprised of a piece of tempered glass having a hole containing an elastomeric bushing through which is passed a headed metal rod which is solid state resistance welded to a metal plate abutting the glass and bushing. Such welds are made by a short duration pulse of high current density programmed in time relation with a pressure pulse to effect the bond with very little temperature increase of the mass of the elements and essentially no change in their form.

3,784,780

APPARATUS AND METHOD OF INDUCTIVELY HEATING SPACED SURFACES ON AN ELONGATED WORKPIECE

John R. Laughlin, Brecksville, and George M. Mucha, Parma Heights, both of Ohio, assignors to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Jan. 8, 1973, Ser. No. 321,928
Int. Cl. H05b *5/02*
U.S. Cl. 219—10.43 **14 Claims**



There is provided an apparatus and method of heating a number of axially spaced, wear surfaces on a camshaft

preparatory to quench hardening the surfaces. At least two fixed inductors surrounding the camshaft simultaneously heat two or more axially spaced surfaces. The workpiece is moved successively through the two inductors until all of the wear surfaces have been inductively heated for quench hardening.

3,784,781

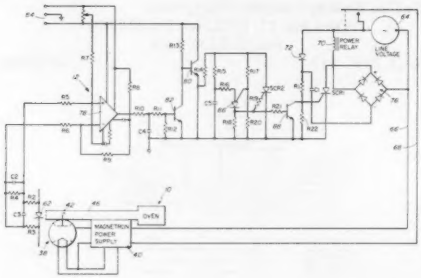
MAGNETRON MODING INTERRUPTER CONTROL CIRCUIT

Richard A. Foerstner, Iowa City, and Rex E. Fritts, Cedar Rapids, both of Iowa, assignors to Amana Refrigeration, Inc., Amana, Iowa

Filed Apr. 11, 1973, Ser. No. 350,270

Int. Cl. H05b *9/06;* **H01j** *29/00;* **H03b** *9/10*

U.S. Cl. 219—10.55 **8 Claims**



A magnetron operating control circuit is disclosed including means for sensing the commencement of electromagnetic energy radiation and means derived from the sensing means to interrupt the application of line voltages to the magnetron power supply and allow the voltages to decrease for a sufficient time to shift to desired normal operating mode conditions when the supply is reenergized. The circuit incorporates a flexible sensing feature which accommodates the time of the interruption cycle to variations in tubes, line voltages and other circuit parameters, particularly in microwave oven apparatus to substantially reduce the magnetron moding problems.

3,784,782

WELDING GUN

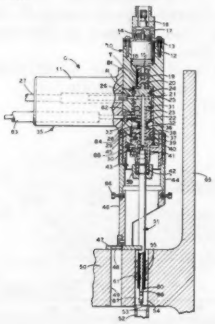
Michel Chazles Lochen, 23, Boulevard de Magnan, Nice, France

Continuation of Ser. No. 60,005, July 31, 1970, abandoned.

This application May 16, 1972, Ser. No. 253,903

Int. Cl. B23k *9/12*

U.S. Cl. 219—125 **4 Claims**



A welding gun for performing shielded arc welding of tubes to tubesheets, and having a rotatable electrode holder assembly which delivers both the welding current and the shielding gas to the electrode that travels in a circular path and arcs to the grounded workpiece.

3,784,783

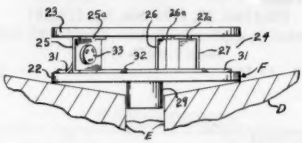
DE-ICING STRUCTURE FOR ROOFS

Guy Gordon Gray, 1654 Pine Rd., Terrebonne Heights, Quebec, Canada

Filed Mar. 26, 1973, Ser. No. 344,646

Int. Cl. H05b *1/00*

U.S. Cl. 219—213 **8 Claims**



A device and method for melting ice and snow on a roof structure; the device comprises upper and lower portions with heating means, for example, a heating cable supported on said lower portion; the device is supported on a sloping portion of a roof and the melted and melting ice and snow flows downwardly under gravity.

3,784,784

HAIR CURLER HEATING DEVICE WITH ELECTRIC RESISTANCE CABLE

Louis Joseph Henri Geominy; Hubertus Johannes Josephus Gommans; Leonardus Frans Helene Mans, and Silvester Marie Ruytenbeek, all of Venlo, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

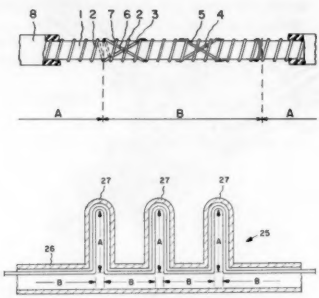
Division of Ser. No. 52,801, July 7, 1970, Pat. No. 3,621,203.

This application Nov. 8, 1971, Ser. No. 196,275

Claims priority, application Netherlands, July 10, 1969, 6910582; June 26, 1970, 7009422

Int. Cl. H05b *1/00;* **A45d** *4/06*

U.S. Cl. 219—222 **2 Claims**



A hair curler heater device having a base plate and a plurality of hollow cylindrical fingers mounted on and projecting from the base plate for receiving a hair curler to be heated. An electric resistance heating cable having high and low temperature sectors is arranged for heating the fingers. The high temperature sectors are accommodated within the fingers and the low temperature sectors are provided in the base plate. The heating cable has a core of flexible non-conducting material and a heating wire helically wound about the core so as to form the high and low temperature sectors. The low temperature sectors are formed by an odd number of layers of heating

wire wound around the core in electrical contact with each other to form a plurality of partial resistors electrically connected in parallel. Alternate layers of the cold sectors are wound about the core in the same direction as the heating wire is wound about the core in the high temperature sectors and the number of layers in each of the low temperature sectors exceeds the number of layers in each high temperature sector by at least two.

3,784,785

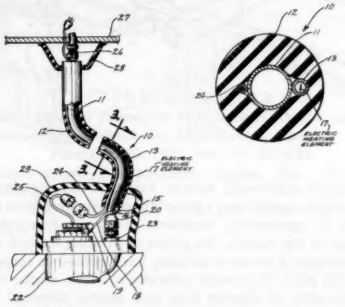
ELECTRICALLY HEATED FLUID CONDUIT COUPLER

Wayne B. Noland, 155 Jefferson, Carlisle, Iowa

Filed Sept. 20, 1971, Ser. No. 181,790

Int. Cl. H05b *3/58*; **F16l** *53/00*

U.S. Cl. 219—301 **1 Claim**



A flexible conduit coupler for connecting a water source to a point of use, such as a house trailer, in conditions where the fluid is subjected to freezing temperatures. The coupler includes an elongated flexible heating conduit secured in side-by-side heat exchange contact with the major portion of the length of a flexible fluid conduit by spaced tape strips. A thermal insulation jacket surrounds the conduits. An electric resistance heating element is removable inserted into the heating conduit and is substantially coextensive in length therewith and can be replaced without disturbing the thermal insulation jacket. The ends of the coupler are provided with flexible protective boots to cover fittings and other hardware not protected by the thermal insulation jacket. An electric power supply cord having connectors on both ends can also be incorporated in the coupler.

3,784,786

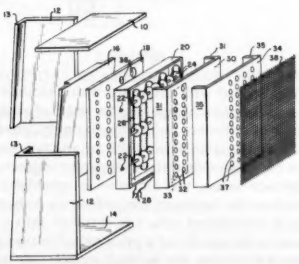
HEAT AND MASS FLOW FORCED CIRCULATION ELECTRIC AIR HEATER

Willard R. Calvert, Sr., 809 Teakwood Dr., Severna Park, Md.

Filed Jan. 25, 1971, Ser. No. 109,348

Int. Cl. F24h *3/04*

U.S. Cl. 219—368 **5 Claims**



Apparatus for distributing uniformly a mass flow of air to a heater, for distributing heat from the heater uniformly into the air flow thereby uniformly cooling the heater surfaces and for redistributing the mixed and heated air flow over a wide area at the location where the heated air enters a reactor.

3,784,787

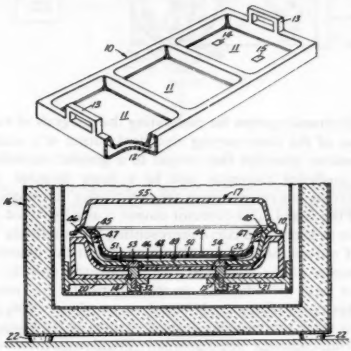
DEVICE FOR STORING AND COOKING FOOD

Thomas S. Shevlin, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 173,414, Aug. 20, 1971, Pat. No. 3,736,981. This application Mar. 26, 1973, Ser. No. 344,830

Int. Cl. F27d *11/02*; **F24c** *7/10*

U.S. Cl. 219—386 **8 Claims**



A tray supporting individual thermally insulated casseroles of food portions for serving complete meals such as entree food to be cooked and frozen and chilled side dish food. The entree and individual side dish food portions are each placed in separate casseroles in chilled or frozen condition. Each casserole thermally encloses the separate food portions and the thermal insulation of the casserole and the initial low temperature levels of the chilled or frozen food retains the food in the casseroles without degradation or pathogenic effects for storage periods up through several hours and retains the side dish food without pathogenic degeneration during the time the entree food is cooked in separate casseroles.

3,784,788

ELECTRIC LIQUID BOILING APPARATUS HAVING AN ELECTRONIC TEMPERATURE SENSOR CONTROL

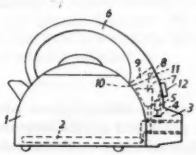
Denise Gisele Josette Fourny, Monte Carlo, Monaco, assignor to Belling & Co., Limited, Enfield, Middlesex, England

Filed May 4, 1972, Ser. No. 250,349

Claims priority, application France, May 4, 1971, 7115967

Int. Cl. F27d *11/02*

U.S. Cl. 219—441 **8 Claims**



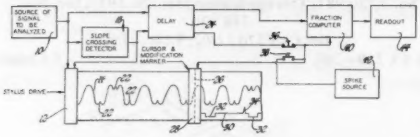
An electric liquid boiling apparatus, particularly an electric kettle, having an automatic cut-out operated by an electronic temperature sensor, e.g. a thermistor which is subjected to vapour when the liquid boils.

3,784,789

FRACTION COMPUTER FOR MULTI-COMPONENT TRACE

Jan A. Vanden Broek, Ann Arbor, Mich., assignor to Transidyne General Corporation, Ann Arbor, Mich.

Filed June 22, 1972, Ser. No. 265,419
Int. Cl. G06k *11/02*; **G06f** *7/48*, *15/20*; **G06g** *7/12*
U.S. Cl. 235—61.6 A **17 Claims**



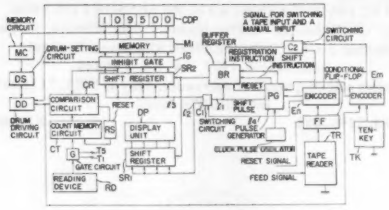
An electronic system for computing the integrals of various fractions of the time varying electrical output of a scanning densitometer provides that output to a graphic recorder, an analog-to-digital converter and to a slope detector which generates signals representing the boundaries of various fractions of the signal. This detector output is also provided to the recorder to produce a curve representing the amplitude variations of a densitometer signal with marks at the boundaries. The outputs of the analog to digital converter and the slope detector are provided to a shift register. An operator generates correction signals based on an observation of the recorder trace representing desired changes in the boundaries as determined by the slope detector. The densitometer output of the shift register is integrated over time periods controlled by the boundary output of the shift register as manually corrected.

3,784,790

AUTOMATIC MONEY-ISSUING APPARATUS

Yoshihiro Hatanaka; Hideto Shigemori, and Akio Ueba, all of Himeji, Japan, assignors to Kabushiki Kaisha Kobuei Kikai Seisakusho, Himeji-shi, Hyogo-ken, Japan

Filed Sept. 9, 1971, Ser. No. 179,045
Claims priority, application Japan, Sept. 11, 1970, 45/79763
Int. Cl. G06k *17/00*
U.S. Cl. 235—61.7 B **4 Claims**



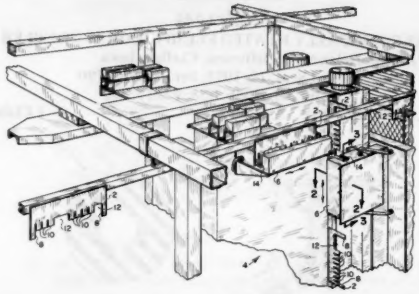
An automatic money-issuing system adapted to automatically issue bank notes and a necessary amount of money of predetermined denominations with the aid of a tape information input or a manual input, which comprises a device adapted to indicate an amount of money to be paid, a circuit storing a signal from the device, a means to issue bank notes or coins, a circuit adapted to compare the amount of money issued with the amount of money indicated, and a device adapted to stop the operation of the device issuing money by a coincidence signal issued from a comparison circuit.

3,784,791

OPTICAL ADDRESSING SYSTEM

Logan L. Pease, Bountiful, Utah, assignor to Eaton Corporation, Cleveland, Ohio

Filed July 29, 1971, Ser. No. 167,315
Int. Cl. G06k *19/04*; **B65g** *43/08*; **H01h** *43/08*; **G06k** *7/14*
U.S. Cl. 235—61.11 E **5 Claims**



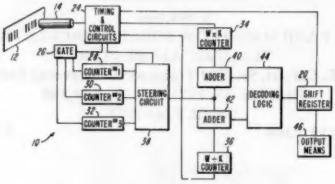
An optical addressing system for an automatically controlled vehicle comprising a plurality of opaque address plates mounted at appropriate locations along possible paths of movement of the vehicle, the plates each being formed with a pair of elongated strobe-indicating bars located at respective ends of the plate to provide optically readable strobe signals and a plurality of shorter bars and spaces disposed intermediate the strobe-indicating bars cooperating to provide an optically readable address signal, and photoelectric means carried by the vehicle for sensing the optically readable signals provided by the address plates.

3,784,792

CODED RECORD AND METHODS OF AND APPARATUS FOR ENCODING AND DECODING RECORDS

Bruce W. Dobras, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Mar. 29, 1972, Ser. No. 239,168
Int. Cl. G06k *7/10*
U.S. Cl. 235—61.11 E **20 Claims**



A novel record with alternate width modulated bars and spaces is decoded by comparing the width of each bar or space with a pair of reference values based on the product and quotient of a constant and the width of another bar or space to establish bit value. When the width value is greater or less than the reference value, the bit value is established. When the width values lie between the reference values, a state of equality is established which is resolved into a bit value by reference to the results of a prior or subsequent comparison. A system embodying the method includes storage means for storing width values, reference registers for establishing successive different sets of product and quotient reference values, and comparators controlled by the stored width and reference

values for establishing the greater and less than and equality status conditions. In one embodiment, a shift register and logic circuits controlled by the status conditions provide dynamic interpretation of the status conditions into code bits as the character is read. In another embodiment, the status conditions are stored and then translated into code bits after a complete character has been read. In one code set, each character code of seven bits formed by four bars and three spaces uses five bits to define the character and the remaining two bits to provide separate bar and space parity bits. This and the fact that only one space "1" and one bar "1" are included in a proper code results in a code with an extremely low expected rate of undetected error. The system also includes separate parity check circuits for the decoded bar and space bits.

3,784,793

CARD READER DEVICE

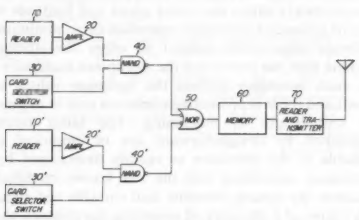
Katsunori Ito, and Shinichiro Imai, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 20, 1971, Ser. No. 209,656

Claims priority, application Japan, Dec. 25, 1970, 45/125613

Int. Cl. H04j *3/08*; **H04m** *1/48*; **G06k** *7/08*

U.S. Cl. 235—61.11 D **8 Claims**



A card reader device for use in a data communication apparatus such as a wire telephone or a radiotelephony equipment, which device can have one or more number cards storing subscribers' numbers set therein, select a desired number card optionally, and read out the number code of the selected card, the data communication apparatus being furnished with no particular number code which identifies the apparatus so that the apparatus may be utilized by many unspecified subscribers.

3,784,794

ELECTRO-OPTICAL READER FOR BAR CODES OR THE LIKE

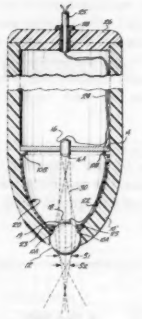
David C. Allais, Edmonds, Wash., assignor to National Bank of Commerce of Seattle, Seattle, Wash.

Filed Oct. 10, 1972, Ser. No. 296,310

Int. Cl. G06k *7/10*; **G08c** *9/06*

U.S. Cl. 235—61.11 E **18 Claims**

An improved hand-held electro-optical reader includes a housing supporting at one end a transparent, substantially spherical member for conducting light to and from the surface of a record on which coded data in the form of a bar code or the like appears. A first element, which may comprise either a light source or a light detector, is disposed within the housing at some distance from the upper surface of the spherical member. A second element, which also may comprise either a light source or detector, is located adjacent the spherical



member's upper surface. Various embodiments of this basic reader are described and illustrated, including a finger grip design.

3,784,795

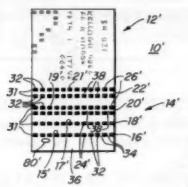
LABEL READER

Richard H. Tuhro, Norwood, Mass., assignor to Computer Identics Corporation, Westwood, Mass.

Filed June 20, 1972, Ser. No. 264,485

Int. Cl. G06k *7/10*

U.S. Cl. 235—61.11 E **2 Claims**



In a label reading system for reading marks formed of at least two segments the improvement including circuit means for excepting a signal derived from a contrasting gap between two such segments including a capacitor and a charging circuit for charging said capacitor; gating means for discharging said capacitor in response to a signal derived from a gap and enabling the charging circuit to charge the circuit in response to a signal derived from a segment; a comparator having a first input connected to the capacitor and a second input connected to a reference voltage; and a clipping circuit connected to the first input to limit the voltage to which the capacitor can be charged to a value greater than the reference voltage for standardizing the initial level at which discharge of the capacitor begins at the end of each segment.

3,784,796

MAGNETIC CARD

Mamoru Namikawa, and Kaneyoshi Arai, both of Tokyo, Japan, assignors to Tokyo Magnetic Printing Company, Ltd., Tokyo, Japan

Filed Mar. 28, 1972, Ser. No. 238,832

Int. Cl. G06k *19/04*; **G11b** *5/80*

U.S. Cl. 235—61.12 M **2 Claims**

A magnetic card having modified edges is disclosed having a magnetic layer on at least a part of a substrate. The magnetic

layer has a surface formed without pronounced edges on the peripheral portions of the magnetic layer. Illustratively, the

peripheral portions of the magnetic layer are inclined or curved surfaces. Thus, the magnetic card can move smoothly across a gap surface of a magnetic head.

3,784,797

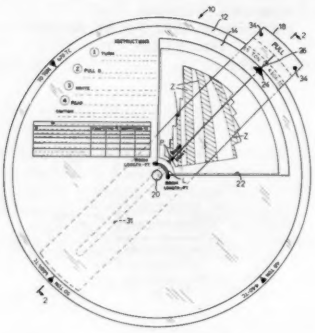
CALCULATOR FOR DETERMINING SPECIFICATION OF CRANES

Joseph G. Kroll, Wauwatosa, Wis., assignor to Harnischfeger Corporation, Milwaukee, Wis.

Filed Oct. 30, 1972, Ser. No. 302,247

Int. Cl. G06c *27/00, 3/00*

U.S. Cl. 235—88 **4 Claims**



A calculator for determining specifications of various models or types of cranes comprises a first plate or disc having four separate graphs or charts radially arranged on each side. Each graph plots the operating radius, elevation, angle and capacity for a known type or model of a specific crane. Second and third plates or discs are rotatably mounted on opposite sides of the first plate by mounting means such as a cylindrical pin or grommet and each of the second and third discs comprises a window or hole through which one selected graph is visible. Movable indicator means calibrated for various boom lengths are provided for use with the selected graph to provide information relative to a particular crane having a boom of particular length. The indicator means are pivotably and linearly movable with respect to the selected graph. The indicator means comprise a first elongated flat transparent member with appropriate indicators thereon and disposed between the first and second discs and having a slot therein for accommodating the aforesaid grommet which movably secures the indicator means relative to the first disc. The indicator means further comprises a second member, similar to the first member, which is disposed between the first and third discs. The ends of the two members of the indicator means project beyond the edges of the discs and are joined together.

3,784,798

ADAPTIVE MACHINING

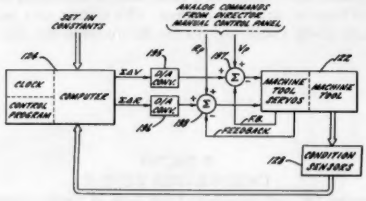
Bruce R. Beadle, Fond du Lac, and John G. Bollinger, Madison, both of Wis., assignors to Giddings & Lewis, Inc., Ford du Lac, Wis.

Filed July 3, 1972, Ser. No. 268,648

Claims priority, application Great Britain, Nov. 9, 1971, 51917/71

Int. Cl. G05b *13/02*; **G06f** *15/46*

U.S. Cl. 235—151.11 **41 Claims**



Methods and apparatus for adaptively controlling a machine tool to provide optimized instantaneous performance as unforeseen or unforeseeable changes in cutting conditions occur; —characterized by a continuous search out of and back into a permissible area defined by constraint boundaries in the cutter speed vs. feed rate (V vs. R) plane. The method and apparatus always adjust the cutter speed and feed rate to conditions of optimized economic operation (e.g., minimum cost or minimum time)—but subject to other limitations of the machine tool, the cutter and the workpiece material—because one such boundary defines the optimum values of cutter speeds and feeds representing minimum cost or minimum time per unit length of machining. The latter boundary is established by straightforward use of empirical contants, available in the literature or readily determined by known techniques, associated with the well known modified Taylor equation. By sensing machine tool variable and signaling actual values of a plurality of operating parameters, the output rate of the machine tool is increased until the economic restraint, or some other inherent limitation restraint, is reached. The corrective action to remove any constraint violation is based upon a grouping of the several signaled parameters according to the shapes of the respective boundary lines corresponding thereto in the V, R plane, so that the method steps for effecting correction of any constraint boundary violation are relatively few in number and may be carried out by novel apparatus which is simple and practical.

3,784,799

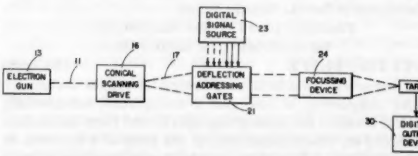
HIGH SPEED DEFLECTION MODULATOR ELECTRON BEAM SIGNAL PROCESSOR

Walter E. Crandall, Malibu, and Orlie L. Curtis, Jr., Rolling Hills Estates, both of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Filed May 8, 1972, Ser. No. 251,018

Int. Cl. H04b *3/52*; **H03c** *3/34*

U.S. Cl. 325—130 **10 Claims**



A high-speed electron beam signal processor suitable for time-multiplexing a plurality of digital signals is disclosed. A

focused electron beam, which may be developed by an electron gun, is conically scanned. The conical beam is passed through an addressing plate structure which includes a plurality of plate electrode members, each for receiving a separate digital input signal. The beam is deflected in accordance with the signals addressed to the addressing plates as it travels past these plates in succession. The beam passes from the addressing plates through an electrostatic lens which focus it onto a target. The target which may comprise a target diode provides a multiplexed output signal in accordance with the digital inputs fed to the addressing plates.

3,784,800

SYSTEMS FOR SURVEYING AND CORRECTING TRAJECTORIES

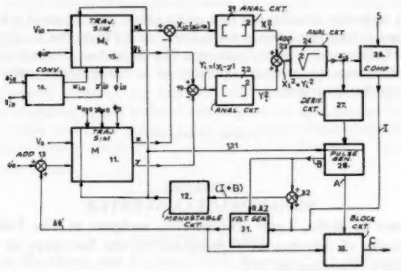
Guy Claude Willoteaux, Saint-Germain-en-Laye, France, assignor to Societe Francaise d'Equipments pour la Navigation Aerodrome de Villacoublay

Filed May 26, 1972, Ser. No. 257,345

Claims priority, application France, May 27, 1971, 7119184; May 27, 1971, 7119185

Int. Cl. G06g *7/78*

U.S. Cl. 235—150.27 **7 Claims**



A system for controlling the trajectory of a moving body such as an aircraft or missile moving in the vicinity of one or more relevant objects which may be moving or stationary. The trajectory is required to fulfil certain imperatives such that the body following it either avoids the relevant object by at least a specified distance or the imperatives may require the body to hit or come within at least a specified distance of the object. The system calculates the distance between the body and object and by taking account of the speeds and direction of each simulates a series of hypothetical trajectories diverging on either side of the actual trajectory until a hypothetical trajectory is determined which satisfies the imperatives, the system then instructs the body's controls to change the linear and/or angular speed thereof so that the aircraft follows the latter trajectory.

3,784,801

DATA HANDLING SYSTEM ERROR AND FAULT DETECTING AND DISCRIMINATING MAINTENANCE ARRANGEMENT

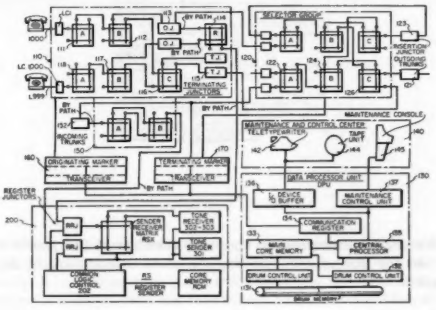
James P. Caputo, Chicago, and Fred A. Weber, Glen Ellyn, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed July 12, 1972, Ser. No. 270,909

Int. Cl. G06f *11/04*

U.S. Cl. 235—153 AK **15 Claims**

A maintenance arrangement responds to a false signal condition, produced by a data handling system, by recycling the timing generator controlling the data handling system to cause the signals in question to be repeated. In order to determine whether the false signal condition occurred only momentarily or remains present during the recycle operation, two types of detecting circuits are provided. Error detecting circuits respond if the false signal condition has a single occurrence, and does not remain present during the recycle operation and thus is interpreted as an error condition caused by the spurious introduction of noise pulses or the like, and fault detecting circuits respond if the false signal condition continues to be present or reappearing during the recycle operation to indicate a fault condition and to request other equipment to service the data handling system. Also, the maintenance arrangement designates the group of signals resulting in the false signal condition by storing group-identifying information in the memory of the data handling system so that the servicing equipment can determine the source of the problem. A register of the data handling system storing information relating to the group of signals resulting in the false condition is inhibited from being altered by the maintenance arrangement, which sets a freeze indicator in such a register so that all other information stored therein is preserved for use by the servicing equipment.



3,784,802

INVENTORY CONTROL DEVICE

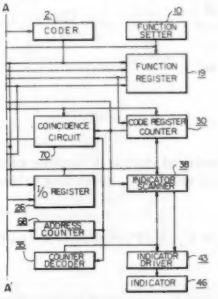
Masataro Imai; Hiroshi Ishizawa, and Takehiko Kanbayashi, all of Ise, Japan, assignors to Shinko Electric Co., Ltd., Tokyo, Japan

Filed July 14, 1971, Ser. No. 162,586

Claims priority, application Japan, May 20, 1971, 46/34595

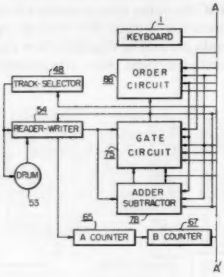
Int. Cl. G06f *15/24*

U.S. Cl. 235—168 **7 Claims**



A comparatively small electronic inventory control device for indicating the current stocks of goods, individually or in succession. The item numbers of the goods are selectively entered by push-button switches. New information for updating the stocks is entered by the same switches. Numerals for item

number and the information are differentiated by separate manual switch means. A rotary memory means having addresses corresponding to the item numbers of the goods is used for storing and updating the stock information of the goods.

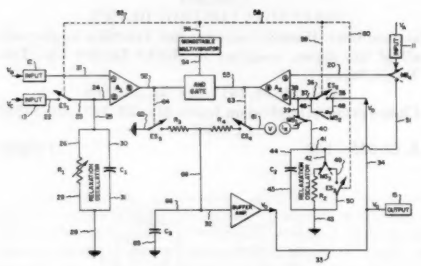


3,784,803

MULTI-MODE COMPUTING CIRCUIT

Thomas A. Brendle, Hamburg, N.Y., assignor to Audn Corporation, Hamburg, N.Y.

Filed Jan. 30, 1973, Ser. No. 328,001
Int. Cl. G06g 7/16
U.S. Cl. 235—195 **32 Claims**



A single electrical circuit is capable of alternatively calculating an output voltage V_O according to the general formula,

$$V_O = V_A (V_C/V_B)^n \text{ or } V_O = K \ln (V_C/V_B)^T$$

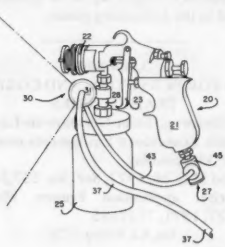
where V_A, V_B and V_C are circuit input voltages and n, K, and T_1 are determinable values of the circuit. A first relaxation oscillator may be selectively coupled to a second relaxation oscillator or to a chargeable capacitor supplied with constant current. The value of V_O is repeatedly adjusted as a function of decaying response time. V_O is computed when two response times are driven into equality.

3,784,804

SPRAY GUN LIGHT ASSEMBLY

Leo C. Sabatelli, 318 S. Church St., Clifton Heights, and William L. Jesse, 524 Elm St., Upper Darby, both of Pa.

Filed May 3, 1973, Ser. No. 356,920
Int. Cl. F21v 33/00
U.S. Cl. 240—2 FD **3 Claims**



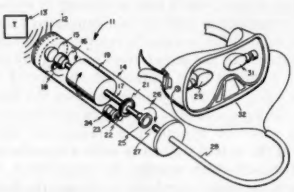
A light for attachment to a paint spray gun wherein a high intensity halogen lamp is forced air cooled from the source of air that is used in spray painting. The lamp has a flame retardant screen to prevent ignition of a combustible mixture within the spray area.

3,784,805

SONAR IMAGE CONVERTER

Albert L. Rolle, Lynn Haven, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 4, 1972, Ser. No. 296,500
Int. Cl. G01s 9/66
U.S. Cl. 340—3 R **17 Claims**



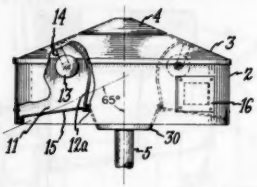
A sonar system is disclosed as having a rotatable shaft with an electroacoustical transducer array mounted on one end thereof, a light output diode readout array mounted on the other end thereof, a receiver mounted on said shaft and connected between said transducer and readout arrays. A transmitter is also connected to said electroacoustical array. An electric motor rotates said shaft through a pair of gears, and a programmed function generator causes sonar target search and echo signals to be timely broadcast by said transmitter and received by said receiver during the rotation of said arrays. An objective lens views the outputs from the light diode output array and transmits it via a bundle of optical fibers to a pair of readout prisms located in a diver's face mask. With the exception of a large portion of the optical fibers and readout prisms, the entire sonar system may be encased in a waterproof housing to facilitate its being used as a visual aid to underwater swimmers and divers working in turbid water.

3,784,806

LUMINAIRE

Lewis W. Kenyon, Flat Rock, and Jerry R. Plemmons, West Asheville, both of N.C., assignors to General Electric Company

Filed May 4, 1972, Ser. No. 250,444
Int. Cl. F21s 1/10, 3/10
U.S. Cl. 240—25 9 Claims



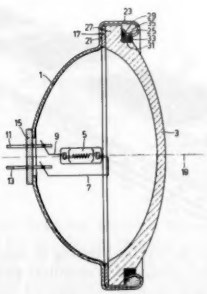
Post top luminaire has a plurality of gaseous discharge lamps arranged in a sealed annular optical enclosure formed by an inner assembly of reflectors, an outer cylindrical housing, and a bottom transparent panel. An axially extending support formed of four elongated angle members attached at the bottom to a slipfitter is provided at its lower portion with quick-disconnect means for detachably securing a ballast assembly selectively to the sides of the central support. The arrangement provides for light ray distribution with effective light sheilding cutoff without crossing of the light beams from the lamps, while the central mounting of the ballast assemblies permits cooler operation of the latter as well as ready access for servicing.

3,784,807

ELECTRIC LAMP

Anton Boekkooi, and Andreas Maria Heeman, both of Emmasingel, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 13, 1972, Ser. No. 288,596
Claims priority, application Netherlands, Sept. 17, 1971, 7112768
Int. Cl. F21v 17/02
U.S. Cl. 240—41.5 4 Claims



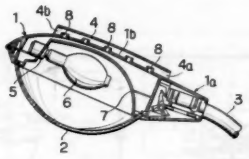
A lamp in which the reflector which is provided with a halogen incandescent lamp is beaded, on its widened circumference, around the edge of a cover glass and an epoxy glue is present between said flanged part and a more central part of the cover glass. The flanged edge serves to secure the cover glass and the epoxy resin serves for a substantially completely diffusion-tight seal against water vapour from the atmosphere.

3,784,808

HEAT RADIATING DEVICE FOR ILLUMINATING APPARATUS

Shinjiro Mori, Tokyo, Japan, assignor to Mori Denki Manufacturing Co., Ltd., Tokyo, Japan

Filed Aug. 21, 1972, Ser. No. 282,011
Claims priority, application Japan, Mar. 21, 1972, 47/27398
Int. Cl. F21v 29/00
U.S. Cl. 240—47 6 Claims



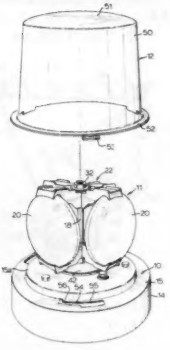
A heat radiating device for use in an illuminating apparatus comprising a heat radiating member secured to a wall of a body of said apparatus and formed with end openings at the opposite ends thereof. Air vent means adapted to establish air communication between the inside of said body and the atmosphere pass through the inside of the heat radiating member. As a result the temperature rise of the apparatus which is caused by a lamp bulb therein can be kept below a certain value and the life of the bulb can be increased. Additionally, stainless steel which has not been used in the past in the construction of the apparatus because of its relatively low heat conductivity may now be used so that the painting process applied to said body may be eliminated and the durability of said body may be increased.

3,784,809

EMERGENCY ROTATING WARNING LAMP

John Smith, 505 Cummer Ave., Willowdale, Ontario, Canada

Filed July 26, 1972, Ser. No. 275,217
Int. Cl. F21m 7/00
U.S. Cl. 240—49 8 Claims

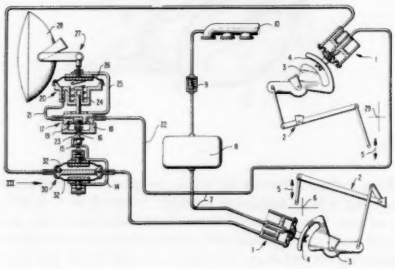


An emergency rotating warning lamp comprising a base, a plurality of sealed beam bulbs, an electric motor mounted on the base and having a shaft on which the bulbs are supported by pairs of modular brackets, and a lens telescoped over the lamps and fixed to the base.

3,784,810
PNEUMATICALLY OPERATING CONTROL INSTALLATION FOR THE AUTOMATIC ALIGNMENT OF MOTOR VEHICLE HEADLIGHTS

Rudolf Andres, Sindelfingen; Hermann Moller, Aidlingen, and Franz Seyfried, Sindelfingen, all of Germany, assignors to Daimler-Benz AG, Stuttgart, Germany

Filed Nov. 5, 1971, Ser. No. 195,984
Claims priority, application Germany, Nov. 6, 1970, P 20 54 644.5
Int. Cl. B60g 1/06
U.S. Cl. 240—7.1 LJ 20 Claims

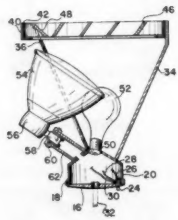


A pneumatically operating control installation for the automatic alignment of motor vehicle headlights, in which the control members coordinated to one or two axles of the motor vehicle which align the headlights to a constant light range as a function of changes of the distance of the respective axle to the superstructure of the motor vehicle by way of adjusting motors and a control device, are constructed as pressure modulators while a vacuum, available at all times, is fed to the control installation.

3,784,811
LAMP WITH INDIRECT AND DIRECT LIGHTING FIXTURES

Abe Hyman Feder, 15 W. 38 St., New York, N.Y.

Filed Dec. 20, 1972, Ser. No. 316,782
Int. Cl. F21s 1/12, 3/10
U.S. Cl. 240—81 LD 10 Claims

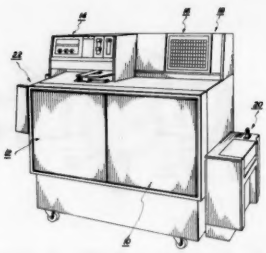


Lamps embodying a shade together with a bulb and a reflector lamp element which provides both indirect lighting through the top of the shade and direct lighting through the bottom of the shade. The lamp is characterized by an especial baffle which directs the indirect lighting upwardly and outwardly of the shade and simultaneously downwardly through the sides of the shade.

3,784,812
DATA INSERTION APPARATUS

Melvin E. Swanberg, Claremont, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed May 22, 1972, Ser. No. 255,739
Int. Cl. G03b 27/52
U.S. Cl. 355—41 11 Claims



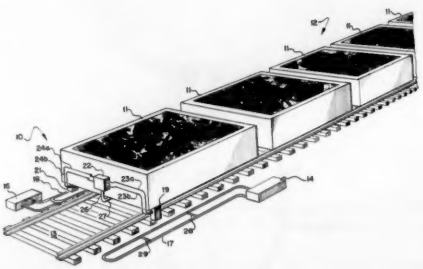
Microfiche enlarger printer apparatus which includes random frame selection circuitry wherein the frame selection input data is inserted via a novel panel, the front panel surface having positions for data entry corresponding to the microimage format on a microfiche card. The apparatus further includes logic and storage components for allowing entry of the frame selection data for one microfiche card prior to the completion of the reproduction cycle of the selected frames on another microfiche card and which is responsive to only the first and last panel positions actuated by an operator.

The panel further includes display means at each panel position, for providing the operator a visual indication of the panel positions which have been actuated.

3,784,813
TEST APPARATUS FOR PNEUMATIC BRAKE SYSTEM

Paul T. Ryan, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed June 6, 1972, Ser. No. 260,123
Int. Cl. B61l 1/20
U.S. Cl. 246—169 R 9 Claims



An apparatus for cyclical testing in integrity of a railway pneumatic brake system. A transmitter and receiver with associated induction loops are situated on opposite sides of the track, and are magnetically coupled to respective inductive coils located on opposite sides of a rearward track car. A switch electrically couples the inductive coils in response to the pneumatic pressure in the brake system, the signal reception from the transmitter to receiver thereby providing an indication of system integrity. In an automatic railroad operation the test can be made by a single person at the remote operation station, or be programmed as part of the control cycle.

3,784,814

QUADRUPOLE MASS SPECTROMETER HAVING RESOLUTION VARIATION CAPABILITY

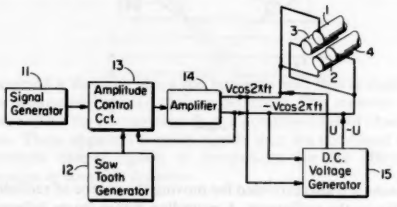
Tadashi Sakai; Masahiko Sakimura, and Yoichi Ino, all of Tokyo, Japan, assignors to Nippon Electric Varian, Ltd., Tokyo, Japan

Filed Mar. 12, 1971, Ser. No. 123,687

Claims priority, application Japan, Mar. 14, 1970, 45/21704; July 18, 1970, 45/63410

Int. Cl. H01j *39/34*

U.S. Cl. 250—41.9 DS 5 Claims



A quadrupole mass spectrometer includes an ionization chamber, an ion detector, and a quadrupole structure having four electrodes extending therebetween. A d.c. voltage U and a high frequency voltage of amplitude V are linearly superimposed and are applied to the electrodes while maintaining the relationship $U=\alpha_M V - K$, where α M denotes a critical U/V ratio. This constrains the mass peaks of a spectrum to be of substantially uniform shape. Variation of the parameter K permits the spectrometer resolution to be varied.

In accordance with one aspect of the present invention, the d.c. voltage is maintained constant at values lower than the peak value of the stability curve for atomic hydrogen in a range of smaller values of the voltage amplitude V. The spectrum for atomic hydrogen can thereby be isolated.

3,784,815

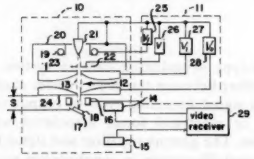
LOW VOLTAGE FIELD EMISSION SCANNING ELECTRON MICROSCOPE

Vincent J. Coates, Los Altos, and Leonard M. Welter, Saratoga, both of Calif., assignors to American Optical Corporation, Southbridge, Mass.

Filed Aug. 16, 1971, Ser. No. 171,815

Int. Cl. H01j *37/26*

U.S. Cl. 250—49.5 C 16 Claims



A Field Emission Scanning Electron Microscope having a field emission tip for generating charged particles and being axially aligned with an electrode and with an intermediate electrode interposed there between. The electrode and the intermediate electrode forming a field lens for focusing the charged particles from the field emission tip. Appropriate voltages are applied for providing extraction, acceleration and focus fields. The electrode potential being lower than the intermediate electrode potential with respect to the charged particles and selected to provide a real focus of the charged particles at a position outside the lens field and distal of the field emission tip thereby producing an intense beam of low energy particles.

3,784,816

METHOD FOR EXECUTING TIME-DETERMINED ANALYSIS IN PHYSICAL OR CHEMICAL EXAMINATION OF SUBSTANCES AND AN APPARATUS FOR EXECUTING THE METHOD

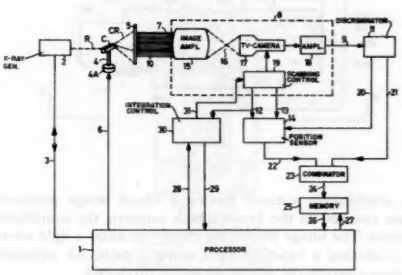
Sixten Abrahamsson, 31, Sodermalmsgatan, Molndal, Sweden

Filed June 1, 1970, Ser. No. 42,258

Claims priority, application Sweden, May 30, 1969, 7700/69; Feb. 13, 1970, 1892/70

Int. Cl. G01n *21/00*

U.S. Cl. 250—273 12 Claims



The invention concerns a method for measuring the magnitudes of a great number of quantities which may vary very rapidly within wide limits. Each of the magnitudes to be measured is converted into a light signal having an intensity corresponding to the magnitude of the respective quantity. All such light signals are individually integrated during successive, accurately defined time intervals. At the end of each interval it is determined which integrals having reached at least one of a plurality of predetermined levels.

3,784,817

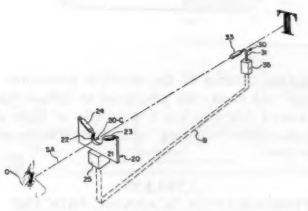
RADIO LUMINESCENT SIGHTING ARRANGEMENT

Dean B. James, Delmont; Seymour H. Smiley, Pittsburgh, and Ralph E. Whittaker, Jr., Upper St. Clair, all of Pa., assignors to Atlantic Richfield Company, Glenolden, Pa.

Filed May 11, 1971, Ser. No. 142,190

Int. Cl. F21k *2/02*

U.S. Cl. 250—467 4 Claims

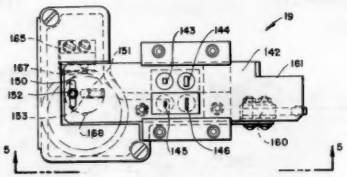


An illuminating arrangement is disclosed which, in one particular embodiment, includes a pair of optically-alignable "sight markings", the markings being illuminated and defined, at least in part, by a "radio-luminescent" segment, especially suited for a dimly-lit field of view, these segments including a phosphorescent material and a "matched" radio-isotope adapted to induce prescribed phosphorescence.

3,784,818
SCINTILLATION SCANNER WITH REMOTE CONTROL APERTURE

Albert L. Stoeckel, Euclid; Walter F. Mog, Willowick, and Carl J. Brunnett, Mayfield Heights, all of Ohio, assignors to Picker Corporation, Cleveland, Ohio

Filed June 3, 1971, Ser. No. 149,736
Int. Cl. G01t *1/20*
U.S. Cl. 250—71.5 S **11 Claims**

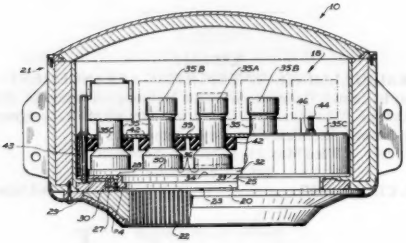


A scintillation scanner having a visual image producing means coupled to the boom which supports the scintillation detector. The image producing means includes a light source for producing a beam of light along a path. An adjustable aperture controls the size of the image produced.

3,784,819
SCINTILLATION CAMERA WITH LIGHT DIFFUSION SYSTEM

Ronald J. Martone, Cheshire; Samuel C. Goldman, Bethany, and Clifford C. Heaton, Meriden, all of Conn., assignors to Picker Corporation, Cleveland, Ohio

Filed Mar. 5, 1971, Ser. No. 121,445
Int. Cl. G01t *1/20*
U.S. Cl. 250—366 **37 Claims**



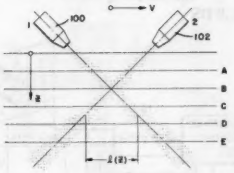
A scintillation camera of the multiple phototube type. A thin light pipe and masks are employed to diffuse the light so that the camera operates on a principle of light diffusion rather than phototube "viewing" as described in the prior art.

3,784,820
TOMOGRAPHIC SCANNING PROCESS

Floro D. Miraldi, Cleveland Heights, Ohio, assignor to Case Western Reserve University, Cleveland, Ohio

Division of Ser. No. 48,166, June 22, 1970, Pat. No. 3,688,113.
This application June 25, 1971, Ser. No. 156,951
Int. Cl. G01j *39/18*
U.S. Cl. 250—362 **10 Claims**

A radioisotope device having a collimator delimits radiation from a source. A scintillation crystal having a rectangular cross-section and a generally elongated shape receives radiation after it passes through the collimator and changes it to visible light at each point by a process known as scintillation. Photomultiplier tubes at each end of the scintillation crystal convert the light to electrical pulses. The amplitudes of electrical pulses are converted to logarithms of the amplitudes and summed. A pulse height selector chooses only the sums of those logarithms desired for observation. The logarithms of the amplitudes are also subtracted to find the location of the scintillation in the scintillation crystal.



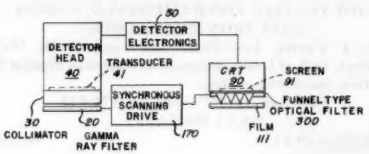
Means are also provided for moving the source of radiation relative to the collimator. A recording means stores information concerning the relative positions of the source and the collimator during the time radiation is received. Information from a plurality of scans allows a determination of a pattern of the radiation at different depths and areas within the source.

It is also possible to use a plurality of collimators and scintillation crystals and a single scan to determine radiation patterns at multiple depths within the source.

3,784,821
SCINTILLATION CAMERA WITH IMPROVED RESOLUTION

Ronald J. Jaszczak, Arlington Heights, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Nov. 22, 1971, Ser. No. 200,700
Int. Cl. G01t *1/20*
U.S. Cl. 250—368 **8 Claims**



An Anger-type scintillation camera system fitted with a gamma ray filter between the object under study and the detector and a signal funneling type of output signal filter, in mechanical or electrical form, associated with an image recording film. The gamma ray filter and signal funneling type of output signal filter scan in synchronism so that the total radioactivity distribution in the object is documented on the film with improved resolution.

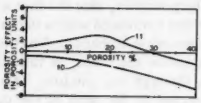
3,784,822
RADIOACTIVITY WELL LOGGING METHODS AND APPARATUS

Nick A. Schuster, Darien, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed July 13, 1971, Ser. No. 162,068
Int. Cl. G01v *5/00*
U.S. Cl. 250—260 **8 Claims**

An illustrative embodiment of the invention compensates neutron measurements of the porosity of an earth formation for sudden changes in borehole diameter. Typically, a sidewall

porosity logging tool for transport through a borehole is equipped with two neutron detectors spaced at different distances from the neutron source. In order to improve the vertical resolution of the tool, a circuit stores the signal from the longspaced detector until the shorter spaced detector has



traversed a distance along the borehole wall that is equal to the separation between the two detectors. This memory feature adjusts the porosity signals to a common zone of observation. These apparent porosity signals then are combined with borehole caliper signals to compensate for the effect of changes in borehole diameter.

3,784,823

METHOD AND DEVICE FOR THE DETECTION OF FISSION PRODUCTS

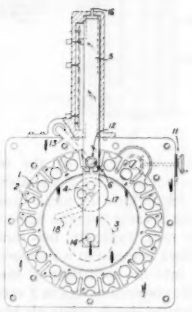
Svetislav Kostic, Paris, and Roger Le Meur, Verrieres-le-Buisson, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Jan. 19, 1972, Ser. No. 218,861

Claims priority, application France, Jan. 22, 1971, 7102218

Int. Cl. G01j *1/18*

U.S. Cl. 250—83.6 FT **14 Claims**



The method consists in carrying out the electrical collection of fission products on both sides of very thin metallized discs of polyester insulating material which are placed at the center of a spherical chamber and in measuring the radioactivity with a set of two electron detectors mounted to detect activity of the discs in all directions.

The device for carrying out the method comprises a magazine constituted by a rotary circular ring provided with spaced openings each intended to accommodate a disc, a spherical ion-collection chamber, two parallel semiconductor detectors and a unit for conveying each disc from the magazine into an opening formed in a transfer plate. The disc is transferred by the plate to an ion-collection chamber, then passed between the two detectors in order to measure the activity and energy spectrum of the beta radiation of the collected ions then returned to the magazine.

3,784,824

TRITIUM TARGET WITH COMPENSATED SPUTTERING

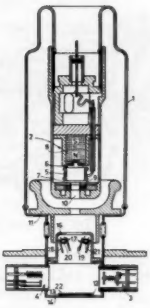
Otto Reifenschweiler, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 18, 1970, Ser. No. 99,550

Claims priority, application Netherlands, Jan. 23, 1970, 7000938

Int. Cl. G21g *3/00*

U.S. Cl. 250—84.5 **3 Claims**



A neutron generator comprising a vaporiser or an atomizer to vapour-deposit or sputter on the target plate during operation a layer which consists of a material which cannot take up, or takes up very little, hydrogen.

3,784,825

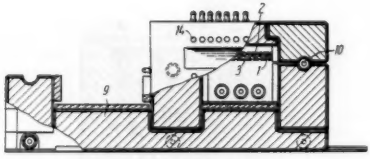
BETA-IRRADIATION APPARATUS

Evgeny Borisovich Mamin, Tokmakov pereulok, 3-5, kv. 69; Viktor Alexeevich Makarov, Kropotkinskaya ulitsa, 40, kv. 154; Galina Petrovna Korneeva, prospekt Bernadskogo, 111, kv. 148; Boris Safronovich Poppel, ulitsa Nametkina, 11, kv. 21, and Vyacheslav Ivanovich Ivanov, Checersky pereulok, 4, korpus 2, kv. 29, all of Moscow, U.S.S.R.

Filed Nov. 18, 1970, Ser. No. 90,523

Int. Cl. G21h *5/00*

U.S. Cl. 250—106 S **5 Claims**



A beta-irradiation apparatus in which an irradiator is divided into at least two compartments which accommodate holders each of which is filled with a substance containing a beta-emitting radioisotope enclosed in a plurality of separate hermetic capsules arranged in a matrix. The holders in the compartments and the capsules in the holders are disposed so that by a suitable arrangement of the capsules, the desired intensity and geometry of the beta-radiation field is secured.

3,784,826

APPARATUS FOR ANALYSING CONTINUOUSLY DISCRETE BIOLOGICAL LIQUID SAMPLES

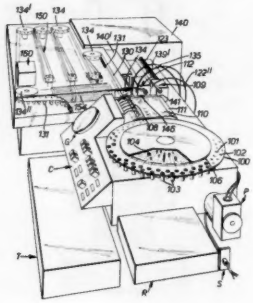
Kenneth D. Bagshawe, London, and Derek N. Marchant, Hassocks, both of England, assignors to The Hayward Foundation, London, England

Filed Feb. 24, 1971, Ser. No. 118,426

Claims priority, application Great Britain, Mar. 3, 1970, 10,023/70

Int. Cl. G01t 1/16

U.S. Cl. 250—106 SC **26 Claims**



Analysis apparatus primarily for carrying out biological analyses using radioimmunoassay techniques includes a turntable disc for carrying a plurality of specimens. A delivery arm delivers successive samples to a row of dilution containers and simultaneously supplies a diluent. A transfer arm controlled by a code on the turntable disc picks a selected diluted sample and transfers it to one of a long series of incubation chambers each of which contains a reagent. A second reagent is added at the time of transfer and the mixture is incubated prior to removal by an appropriate device. After removal the active constituents are filtered and measured quantitatively by a counter.

The pumps for transfer of liquids are peristaltic and where a sample has to be drawn up incorporate an integral bellows.

3,784,827

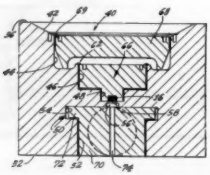
CONTAINER INSPECTION SYSTEM AND METHOD

Fredrick L. Calhoun, Torrance, Calif., assignor to Industrial Dynamics Company, Ltd., Torrance, Calif.

Filed Mar. 5, 1971, Ser. No. 121,321

Int. Cl. G21f 5/02

U.S. Cl. 250—106 S **11 Claims**



An apparatus for inspecting a container to determine whether such container has properties different from a particular standard by utilizing a long life radioactive isotope source that emits low energy gamma radiation. The invention also relates to a method of making a very compact but safe housing to encapsulate the low energy gamma radiation source used in the apparatus.

The housing utilized to encapsulate the radioactive source can provide adequate shielding to protect nearby personnel by using a metal such as stainless steel because of the low energy output of the source. A thin window, formed as an integral part of the housing, freely passes a portion of the source radiation that is used for inspection purposes. The housing is constructed from standard metal bar stock in a particular manner that minimizes the possibility that the thin window will include defects or impurities contained within the metal bar stock.

A collimation means is utilized in front of the source housing window to confine the beam of radiation that emanates from the source through the window. This collimated radiation beam is directed at the area of the container to be examined and the amount of radiation passing through the container provides an indication as to whether or not the container has properties different from a particular standard.

3,784,828

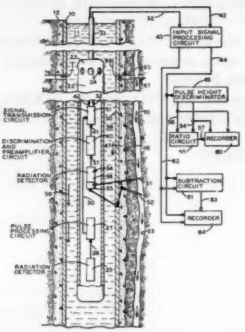
DETERMINING THE LOCATION OF VERTICAL CHANNELS IN A WELLBORE

Donald A. Hayes, Midland, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Mar. 25, 1971, Ser. No. 127,907

Int. Cl. G01v 5/00

U.S. Cl. 250—106 L **9 Claims**



An illustrative embodiment of the invention shows a radioactive tracer technique for distinguishing vertically flowing liquids in formation fractures from flows through passageways in the cement annulus between the steel casing and the borehole wall. Typically, two radiation detectors of different sensitivities respond to a radioactive tracer that has been discharged into the formation at the well depth of interest. If the tracer material moves in a vertical direction with respect to the injection depth, relatively high count rates from both of the detectors indicate that the tracer is flowing vertically through a fracture in the cement. A relatively low count rate in the less sensitive detector, however, indicates that the vertical flow is taking place away from the casing and at some depth within the formation.

3,784,829

RADIANT ENERGY SELECTION MEANS

James R. Bancroft; Richard L. Cleavinger, both of Boulder, Colo.; James M. Hall, Bethesda, and Mark Harris, Wheaton, both of Md., assignors to Ball Brothers Research Corporation, Boulder, Colo.

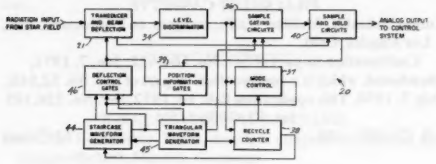
Division of Ser. No. 705,442, Feb. 14, 1968. This application Sept. 3, 1971, Ser. No. 170,727

Int. Cl. G01j 1/20

U.S. Cl. 250—203 CT **13 Claims**

An apparatus and method for conducting a search of a predetermined area for radiant energy utilizing a raster type

scan and responsive to receipt of radiant energy automatically shifting the operational mode from search to track after which that portion of the predetermined area within which the radiant energy was located is repeatedly unidirectionally swept with each succeeding sweep being in quadrature relationship to the previous sweep. A pulse indicative of received radiant energy is produced during each sweep and if of sufficient magnitude, the leading and trailing edges are utilized to cause sam-



pling of deflection currents at the time of occurrence of said leading and trailing edges. The thus sampled currents are averaged to produce an analog output signal indicative of the angular position of the source of the radiant energy within the predetermined area along the particular axis established by the sampled sweep currents. Also provided is a selection circuit whereby a particular source of radiant energy can be selected to the exclusion of other sources within the predetermined area.

3,784,830

IMAGE MAGNIFIER

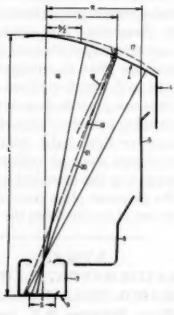
Gunter Schwierz, Erlangen, and Peter Wulff, Frauenaurach, both of Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Oct. 4, 1971, Ser. No. 186,123

Claims priority, application Germany, Oct. 7, 1970, P 20 49 127.4

Int. Cl. H01j *39/12*

U.S. Cl. 250—213 VT **2 Claims**



An image magnifier and intensifier has a vacuum flask upon one end of which lies a photo-cathode. The image-producing ray bundle releases at its surface electrons depending upon the intensity distribution in its cross-section. They are represented electronically-optically at high acceleration voltage upon a screen located upon the other end of the flask. The photocathode represents a calotte having a curvature which differs from the middle to the edge and an opening directed toward the screen. The invention is particularly characterized in that the cross-section of the cathode has a meridianal curvature radius which increases greater than linearly from the center to the edge.

3,784,831

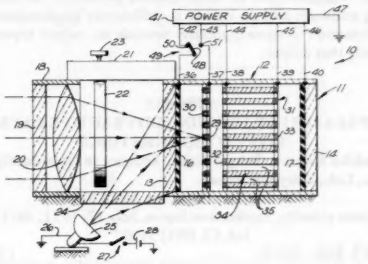
ELECTROOPTICAL SYSTEM

Philip George Reif, Chatsworth, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 4, 1971, Ser. No. 195,745

Int. Cl. H01j *31/50*

U.S. Cl. 250—213 VT **26 Claims**



A direct view infrared monitoring system including a storage tube having a storage mesh with a photoconductive storage surface thereon sensitive only to infrared radiation, the tube having a photocathode to flood the photoconductive surface with electrons. The photocathode is made of a material which is sensitive only to ultraviolet radiation and is transparent to the infrared. A shutter is employed to allow illumination of the photoconductive surface with the infrared or to stop such illumination during reading and erasing steps. The shutter is opened for writing. According to one or more embodiments of the invention, a luminescent screen is supplied with an increased number of electrons by the use of a channel type electron multiplier positioned between the storage mesh and the screen.

3,784,832

OPTICAL SCANNING APPARATUS FOR AVOIDING AMBIGUITY IN A QUANTISED SIGNAL

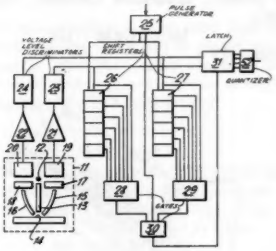
Brian Constantine Sewell, Teddington, England, assignor to The Rank Organization Limited, London, England

Filed Jan. 19, 1973, Ser. No. 325,159

Claims priority, application Great Britain, Jan. 19, 1972, 2,531/72

Int. Cl. G01j *3/34*

U.S. Cl. 250—226 **8 Claims**



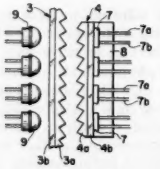
Apparatus for avoiding ambiguity in a quantised signal representing a pattern which is scanned by an optical detector. The apparatus operates to scan the pattern to be represented and to produce a quantised signal each quantum of which represents the major colour in each scanning element of the

pattern scanned. Sampling means are provided which sample the binary signal produced by the scanning means at a rate higher than the rate at which the signal is ultimately to be quantised and the output from the sampling means controls a gating circuit which operates to prevent the signal representing the pattern from changing from a representation of one colour to a representation of another unless a predetermined number of the samples all represent one colour. This avoids any indeterminacy in the quantised signal at colour junctions where there are two or more colours present in an element being scanned, and no colour is sufficiently predominant for the detectors to unambiguously provide an output representing only that colour.

3,784,833
APPARATUS FOR DERIVING DIFFRACTIVE RAYS BY DIFFRACTION GRATINGS

Katsuhiko Kimura, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo-to, Japan

Filed July 11, 1972, Ser. No. 270,688
Claims priority, application Japan, July 17, 1971, 46/73584
Int. Cl. H01j *39/02*
U.S. Cl. 250—237 G **1 Claim**

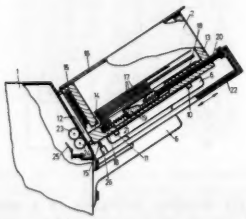


Apparatus for deriving diffractive rays by diffraction gratings which enables light measurement to be effected with high accuracy in addition to the feasibility of making the whole apparatus in a compact size. These features of the apparatus are obtained by the provision of a photoelectric element on the rear side of an index grating at a position in which it faces a movable scale grating with a small distance from this latter grating.

3,784,834
AUTOMATIC FILM DEVELOPING MACHINE WITH MEANS TO SEQUENTIALLY REMOVE FILM SHEETS FROM A MAGAZINE

Helmut Berger, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Mar. 16, 1972, Ser. No. 235,218
Claims priority, application Germany, Apr. 22, 1971, P 21 19 598.2
Int. Cl. G03b *17/26*
U.S. Cl. 250—477 **4 Claims**

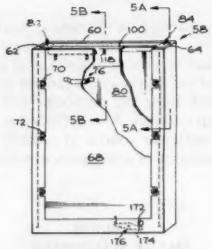


A developing automat with an inner transportation device for sheet films, is provided with a device consisting of at least one store magazine and a holder for the magazine fixed to the automat. The invention is particularly characterized in that the supply magazine is provided with a device for removing individually film sheets located in the magazine as a pile of sheets lying directly one upon the other. The supply magazine is also provided with means actuating the film removing device by the transportation device of the automat.

3,784,835
FILM SHEET CASSETTE

Gunter Schmidt, Malibu, Calif., assignor to Productron, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 104,652, Jan. 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 52,848, July 7, 1970. This application Feb. 14, 1972, Ser. No. 226,105
Int. Cl. G03b *41/16*
U.S. Cl. 250—480 **12 Claims**

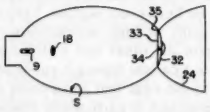


A film sheet cassette useful in medical X-ray applications and particularly in daylight film handling systems which include a dispenser for dispensing film sheets one at a time into the cassette. In use, the loaded cassette is first exposed to an X-ray source to photograph a patient after which it may be positioned in operative relationship with respect to a film processor for releasing the exposed film sheet into the processor. The cassette is comprised of a housing including a back plate and a cover plate fixed thereto in parallel spaced relationship. A pressure plate is disposed between the back plate and cover plate and spring urged against the back plate in light tight relationship therewith. The cassette housing defines channels along opposite edges thereof for slidably receiving cam rods. The pressure plate is provided with follower studs along the edges thereof which ride on cam surfaces of the rods. Actuating pins are provided on both the dispenser and processor for protruding into the channels when the cassette is positioned in operative light tight relationship with respect thereto. The pins engage the cam rods and slide them within the channels thus causing the cam surfaces to lift the follower studs and space the pressure plate from the back plate to thus allow film sheets to enter or exit from the cassette.

3,784,836
IR GENERATOR HAVING ELLIPSOIDAL AND PARABOLOIDAL REFLECTORS

Peter Marvin Tolliver, Brighton, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Oct. 6, 1972, Ser. No. 295,421
Int. Cl. G21h *3/00*
U.S. Cl. 250—495 **10 Claims**



An infrared generator wherein an ellipsoidal reflector has a source rich in infra red at one focus thereof. The end of the

reflector at the other focus merges with a paraboloidal reflector positioned so that the focus of the latter reflector coincides with the said other focus of the former. A second ellipsoidal reflector may be inserted between the former said reflectors with one of its foci coinciding with the said other focus of the former said ellipsoidal reflector, and its other focus coinciding with the focus of the paraboloidal reflector. The axes of the reflectors are coincident, and a lens and plug or equivalent may be provided to recover radiation that might otherwise be lost.

3,784,837

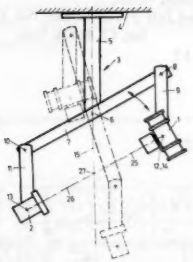
X-RAY DEVICE WITH A STAND

Lars Olof Holmstrom, Solna, Sweden, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed May 8, 1972, Ser. No. 251,376

Int. Cl. H05g *1/00*

U.S. Cl. 250—523 **2 Claims**



An X-ray device has a stand and an X-ray tube mounted upon a bracket which is supported rotatably about a support axis extending perpendicularly to its longitudinal axis. The invention is particularly characterized in that a carrying arm is rotatably mounted upon the free end of the bracket and that the X-ray tube is mounted upon the free end of this arm for rotation about further axes extending parallel to the support axis of the bracket. Driving means are provided which keep constant in space and independently from the swinging location of the bracket the position of the carrying arm relatively to the X-ray tube, whereby the central ray of the X-ray tube is always maintained parallel to the longitudinal axis of the bracket.

3,784,838

SOLID STATE FREQUENCY CONVERTER FOR CORONA GENERATOR

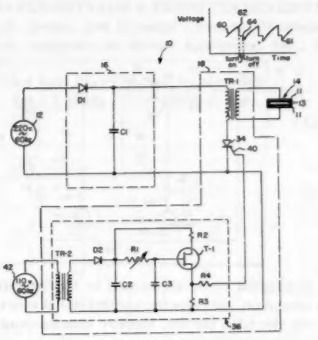
Frank E. Lowther, Phelps, N.Y., assignor to Purification Sciences, Inc., Geneva, N.Y.

Continuation-in-part of Ser. No. 141,148, May 7, 1971, which is a continuation-in-part of Ser. Nos. 830,248, June 4, 1969, and Ser. No. 709,485, Feb. 29, 1968, abandoned, which is a continuation-in-part of Ser. No. 612,751, Jan. 4, 1967, abandoned. This application Aug. 25, 1971, Ser. No. 174,691

Int. Cl. C01b *13/10, 13/12*

U.S. Cl. 250—536 **22 Claims**

A method and apparatus for converting low frequency current to high frequency current and for applying the high frequency current to the electrodes of a corona generator. The frequency converter includes a rectifier circuit, and a chopping circuit. The chopping circuit includes an SCR and a firing circuit connected to the SCR. The chopping circuit does



not require a conventional shut-off circuit. The SCR is connected to an ozone generator through a transformer and automatically shuts off.

3,784,839

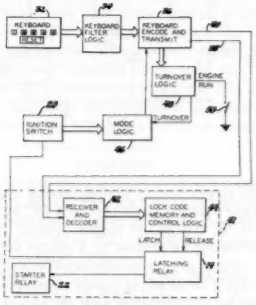
ANTI-THEFT APPARATUS INCLUDING TURNOVER MODE OF OPERATION

John A. Weber, Franklin, Wis., assignor to General Motors Corporation, Detroit, Mich.

Filed July 12, 1972, Ser. No. 271,141

Int. Cl. B60r *25/00*

U.S. Cl. 307—10 AT **2 Claims**



Starting of a motor vehicle is controlled from electronic combination lock circuitry which may be placed in a turnover mode of operation after the engine has been started to thereafter permit a predetermined number of engine starts without the entering of the lock combination.

3,784,840

SOLID STATE REMOTE POWER SWITCH

Richard A. Kirkpatrick, Peabody, Mass., assignor to KLH Research & Development Corp., Cambridge, Mass.

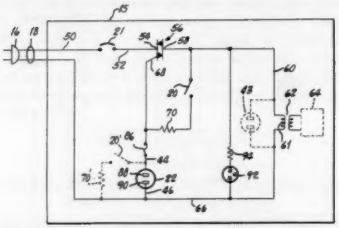
Filed Dec. 21, 1972, Ser. No. 317,240

Int. Cl. H03k *17/00*

U.S. Cl. 307—11 **6 Claims**

A solid state remote power switch is provided, e.g., in an amplifier system having a remotely located phonograph turntable or tape deck. Turning on the phonograph turntable or tape deck ensures that the amplifier is energized at the same time. When the phonograph turntable or tape deck turns off it simultaneously removes power from the amplifier. The

solid state remote power switch includes a semiconductor bidirectional current passing device of the triac type coupled in series between the AC power source and the energization circuitry of the amplifier unit. The phonograph turntable or tape



deck is adapted to be connected to the amplifier unit and, when turned on, provides the control signal which activates or turns on the triac device, thereby simultaneously providing power to the amplifier unit.

3,784,841

ELECTRIC POWER SUPPLY SYSTEM

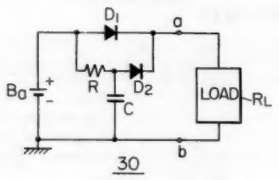
Akio Hosaka, Yokohama City, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Nov. 28, 1972, Ser. No. 310,098

Claims priority, application Japan, Feb. 19, 1972, 47/19983

Int. Cl. H02j *9/06*

U.S. Cl. 307—64 **4 Claims**



An electric power supply system having a capacitor as an auxiliary power source in addition to a DC battery as a main power source. In this power supply system, the capacitor is charged only through a resistor by a source voltage of the DC battery to a voltage approximately equal to the source voltage. The resistor has a value of resistance considerably higher than that of a load to be connected with the power supply system. The DC battery is grounded at its positive or negative terminal. The power supply system is adapted for energizing an actuator of a safety device for a motor vehicle.

3,784,842

BODY CURRENT ACTIVATED CIRCUIT BREAKER

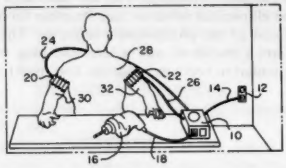
Frederic B. Kremer, 1600 Garrett Rd., Apt. B204, Upper Darby, Pa.

Continuation-in-part of Ser. No. 223,096, Feb. 3, 1972, Pat. No. 3,706,008. This application Dec. 11, 1972, Ser. No. 314,162

Int. Cl. H02h *3/16*

U.S. Cl. 307—92 **9 Claims**

A body current activated circuit breaker responsive to the blow of current through the human body including at least one body encircling sensor to monitor the flow of electrical current in a human being. A circuit breaker is interposed between the source of electrical power supply and an electrical appliance being operated by the human being which causes the current flow, the circuit breaker being responsive to the flow of electrical current monitored by the sensor to automatically and rapidly interrupt the current supply to the electrical ap-



pliance upon detecting current flow through the body that exceeds a predetermined, safe level.

3,784,843

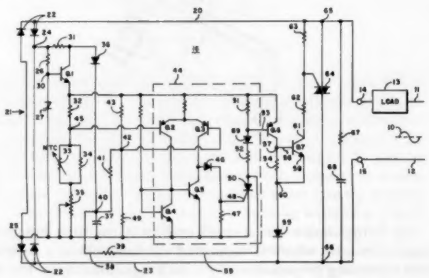
CONDITION RESPONSIVE CIRCUIT WITH CAPACITIVE DIFFERENTIAL VOLTAGE

C. Douglas Gustus, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed July 21, 1972, Ser. No. 274,125

Int. Cl. H02h *5/04*

U.S. Cl. 307—117 **6 Claims**



A condition responsive circuit, disclosed as including a temperature responsive element, is adapted to be connected to by a pair of terminals by an alternating current load and to a source of alternating current voltage. The condition responsive circuit operates through a differential amplifier to control a solid state switch, shown as a silicon controlled rectifier. This solid state switch in turn operates further solid state switching to control the load. A capacitor for creating a differential voltage in the input circuit of the differential amplifier is connected by a discharge circuit to the silicon controlled rectifier so that the voltage on the capacitor is discharged every time the silicon controlled rectifier is conductive.

3,784,844

CONSTANT CURRENT CIRCUIT

Ellwood Patrick McGrogan, Jr., Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

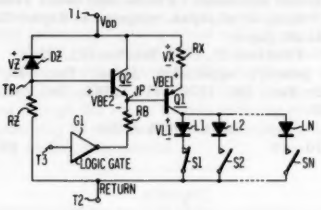
Filed Dec. 27, 1972, Ser. No. 319,006

Int. Cl. H03k *1/04*

U.S. Cl. 307—270 **17 Claims**

A constant current circuit is disclosed which is useful, for example, in a system in which a constant current is supplied to one selected light emitting diode in an array of diodes. The constant current circuit, when energized, supplies a constant current through an output transistor to terminals of a row of light emitting diodes. The current flows through a selected one of the diodes having a closed return-path switch. The constant

current is generated by coupling a constant reference voltage developed across a reference voltage diode through a semiconductor device to input electrodes of the output transistor. The coupling is constructed so that changes in the



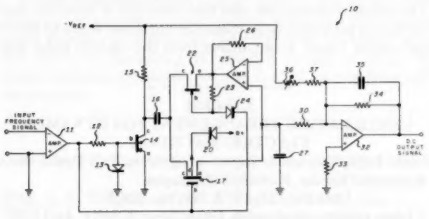
junction voltage drop of the semiconductor device, due to temperature, balance changes in the base-emitter voltage drop in the output transistor, when both are rendered conductive by a logic signal applied thereto.

3,784,845

LINEAR FREQUENCY TO VOLTAGE CONVERTER CIRCUIT

George C. Haas, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Feb. 6, 1973, Ser. No. 330,129
Int. Cl. H03k *5/20*
U.S. Cl. 307—233 **6 Claims**



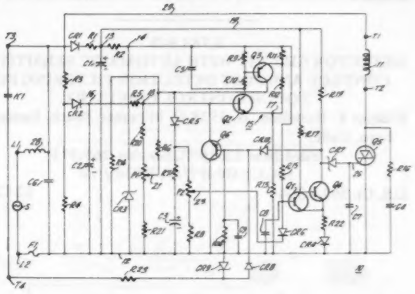
A device which includes a squaring amplifier responsive to an applied input frequency signal for producing constant amplitude square waves at the same frequency as the applied input signal. A switch coupled to the amplifier enables a capacitor to be rapidly charged from a reference voltage and a voltage due to an accumulated charge on a second capacitor during the first half cycle of each square wave. The charge accumulated on the first capacitor is rapidly transferred to the second capacitor during the second half cycle of each square wave through a second switch. The voltage due to the accumulated charge on the second capacitor is coupled through a long time constant discharge circuit to a buffer amplifier including a feedback ripple filter whereby the amplifier provides an output D.C. voltage which is linearly proportional to the frequency of the input signal.

3,784,846

SOLID STATE MOTOR CONTROLLER FOR DISCONNECTING A MOTOR FROM A POWER SOURCE WHEN A PREDETERMINED UNDERVOLTAGE CONDITION PERSISTS FOR A PREDETERMINED TIME

John B. Krick, Joppa, and Bernard Coleman, Westminster, both of Md., assignors to Rowan Controller, Inc., Westminster, Md.

Filed Apr. 24, 1972, Ser. No. 246,610
Int. Cl. H03k *17/26;* **H01h** *47/18*
U.S. Cl. 307—293 **7 Claims**



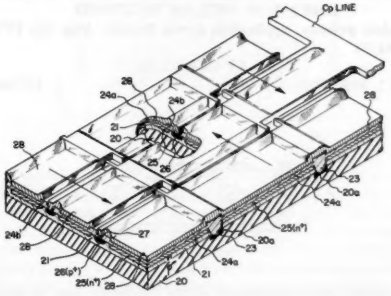
A combination solid state voltage sensing and timing relay employed for disconnecting equipment from a line source when the line voltage drops below a preset voltage for a preset time period. Whereas the pick up voltage of the voltage sensor is fixed at a first level, the drop out voltage is adjustable by means of a variable resistance element to be at a value lying within a range which is just slightly below the pick up voltage at the top of the range to a value which is significantly below the pick up voltage. The time delay interval is adjustable by way of a second variable resistance over a range of the order of from 0.5 to 10 seconds. The output of the undervoltage timer is a single pole normally open solid state switch for selectively connecting or disconnecting the line source from the load, depending upon the condition from the source and the length of time during which this condition persists.

3,784,847

DIELECTRIC STRIP ISOLATION FOR JFET OR MESFET DEPLETION-MODE BUCKET-BRIGADE CIRCUIT

Bruno Kurz, Schenectady; Mark B. Barron, and Walter J. Butler, both of Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 10, 1972, Ser. No. 295,835
Int. Cl. H011 *19/00*
U.S. Cl. 307—304 **20 Claims**



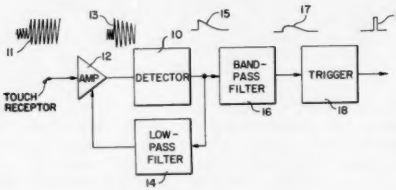
Undesired coupling of JFET or MESFET bucket-brigade stages through the epitaxial layer in a monolithic integrated

bucket-brigade circuit is prevented by isolating adjacent stages by strips of thick oxide dielectric material such as SiO_2. The dielectric strips are formed by selective oxidation to obtain local conversion of the n-type silicon epitaxial layer to SiO_2. In a second embodiment, elongated spaced-apart mesas of the SiO_2 are formed on the substrate prior to forming the patterned n-type silicon epitaxial layer. The storage capacitors of the bucket-brigade stages are MOS devices formed by metal layers overlapping the drain electrode regions of the JFETs or MESFETs diffused in the epitaxial layer with the dielectric material being a SiO_2 layer therebetween.

3,784,848
DETECTOR CIRCUIT WITH AUTOMATIC SENSITIVITY CONTROL AND POST DETECTION FILTERING FOR TOUCH CONTROL CIRCUITRY

William F. Hamilton, II, 1528 C. Miramar Beach, Santa Barbara, Calif.

Filed June 22, 1972, Ser. No. 265,311
Int. Cl. H04f 1/10; H03d 1/20
U.S. Cl. 307—308 **12 Claims**

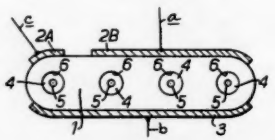


A detector circuit for use in connection with touch control circuitry incorporates automatic sensitivity control and post detection filtering. The detector circuit includes a touch receptor operable by electrical contact with a human body for producing an oscillating signal which increases in amplitude in response to a touch input, detecting means responsive to the oscillating signal for producing an output to indicate the increase in the amplitude of the oscillating signal, a feedback path including a low pass filter responsive to the output of the detecting means for controlling the sensitivity of the detecting means to the oscillating signal, and means responsive to the output of the detecting means for eliminating undesired frequency components from the output of the detecting means.

3,784,849
DEVICES INCORPORATING CAVITY RESONATORS

Brian Frederick Cooper, Chelmsford, England, assignor to English Electric Valve Company Limited, Chelmsford, England

Filed July 28, 1972, Ser. No. 276,093
Claims priority, application Great Britain, Aug. 26, 1971, 40,034/71
Int. Cl. H04r 17/00
U.S. Cl. 310—8.2 **4 Claims**

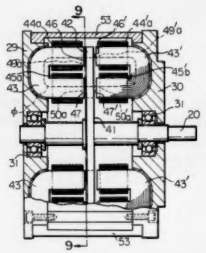


A device incorporating a cavity resonator and in which there is employed a transducer for controlling a conductive member and a further transducer subject to the same strain as the controlling transducer whereby the further transducer produces on an external terminal or lead a low frequency signal representative of the deflection of the controlling transducer.

3,784,850
ELECTRIC PULSE MOTOR

Seiuemon Inaba, Kawasaki; Yo Ikebe, and Sakae Yamamura, both of Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki-shi, Japan

Filed Dec. 27, 1971, Ser. No. 212,156
Claims priority, application Japan, Dec. 28, 1970, 45/132283; Dec. 28, 1970, 45/132285; Dec. 30, 1971, 46/134169
Int. Cl. H02k 37/00
U.S. Cl. 310—49 **10 Claims**



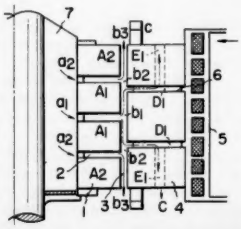
The disclosure relates to an improved electric pulse motor having an arrangement wherein, with respect to a rotor element having a number of rotor-teeth, a stator assembly including a number of geometrically and electrically paired laminated U-shape stator elements is assembled based upon the conventional arrangement, but, the rotor element is provided with a specific construction for strengthening the rotor-teeth, so that radially extended rotor-teeth are reduced in axial thicknesses so as not to increase moment of inertia, making it possible to obtain a large magnetic attractice force from the stator elements so as to provide a large output torque.

The stator elements are also provided with a structure and members to provide a large magnetic attractice force so that a large output torque is obtainable from the electric pulse motor.

3,784,851
VENTILLATING ARRANGEMENT FOR DYNAMO-ELECTRIC MACHINES

Hisashi Fujii, Kawasaki, Japan, assignor to Fuji Denki Seizo Kabushiki Kaisha, Kawasaki-shi, Japan

Filed Feb. 24, 1972, Ser. No. 228,875
Claims priority, application Japan, Mar. 3, 1971, 46/11187
Int. Cl. H02k 9/00
U.S. Cl. 310—58 **1 Claim**



A dynamo-electric machine of the natural ventillation type having no forced cooling nor any fan means to increase cool-

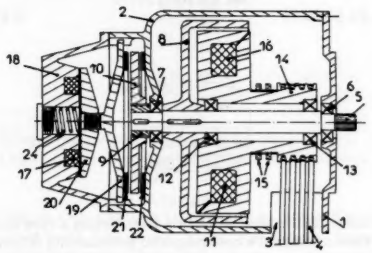
ing of the machine utilizes fan-action caused by the rotation of the rotor whereby cooling air sucked into the rotor space provided by a rotor-spider is generally discharged, through radial ducts in the rotor into the machine air gap and finally axially through the machine air gap. Where very high rotational speeds are involved such as in high frequency generators, in order to reduce excessive windage losses caused by all the cooling air discharging axially through the machine air gap, the dynamo-electric machine stator is provided with independent duct systems comprising stator radial ducts in communication with the rotor radial ducts and stator axial ducts in communication with the stator radial ducts so as to substantially divert the cooling air discharge from the machine air gap into and through the stator, thereby reducing windage losses. The stator may be provided with an additional annularly surrounding cooling arrangement.

3,784,852

SPEED SELECTOR, IN PARTICULAR FOR CRANES OR HOISTING GEARS

Jean Noly, La Clayette, France, assignor to Potain, Val de Marne, France

Filed Aug. 1, 1972, Ser. No. 276,953
Claims priority, application France, Aug. 5, 1971, 7129485
Int. Cl. H02k *49/02*
U.S. Cl. 310—105 **5 Claims**



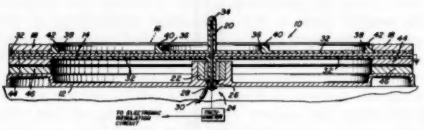
The invention relates to a speed selector. The belts drive the inductor of an eddy-current clutch. When the latter is energized together with the yoke, which puts off the brake against the action of the spring, the shaft is caused to rotate. The speed variation is obtained by varying the current intensity in the inductor.

3,784,853

HOMOPOLAR MOTOR FORMING A SOUND RECORD SUPPORT

Peter A. A. Wangsness, 5035 E. Scarlett, Tucson, Ariz.

Filed May 3, 1972, Ser. No. 250,019
Int. Cl. H02k *31/00*
U.S. Cl. 310—178 **7 Claims**



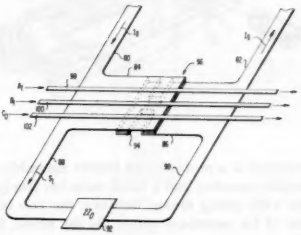
A sound record moving device for a sound recording and reproducing apparatus has a base member and a turntable mounted for rotation on the base member. The turntable is constructed from an electrically conductive material. A magnet is arranged near the periphery of the turntable, and a device in contact with the turntable feeds a current thereto. The turntable, magnet, and current feeding device are arranged cooperatively to form a homopolar motor, with the turntable functioning as the armature of such motor.

3,784,854

BINARY ADDER USING JOSEPHSON DEVICES

Dennis J. Herrell, Somers, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,812
Int. Cl. H03k *17/80, 19/10*
U.S. Cl. 307—212 **9 Claims**



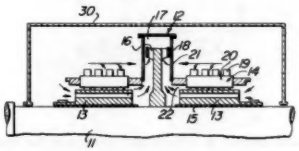
A binary adder using Josephson devices for the sum and carry gates is disclosed. A gating current I_{g1} is applied to a Josephson device operating as a sum gate, and a gating current I_{g2} is applied to a Josephson device operating as a carry gate. Each of said Josephson devices switches from $v = 0$ to $v \neq 0$ when the control current applied thereto lowers the critical gating current below the applied gating currents i_{g1} and I_{g2} respectively. The binary bits to be added, A, B, and Carry, C, from the prior stage, are applied to the Josephson devices as control currents I_x. The sum gate switches to $v \neq 0$, corresponding to a sum bit output, S, when the total control current is I_x or $3I_x$. The carry gate switches to $v \neq 0$, corresponding to a carry bit output, C, when the total control current is $2I_x$ or $3I_x$.

3,784,855

DEVICE FOR COOLING THE COLLECTOR PORTION OF A ROTARY ELECTRIC MACHINE

Shoji Motegi, Hitachi; Norihiro Oki, Katsuta, and Sadao Mito, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 1, 1971, Ser. No. 185,744
Claims priority, application Japan, Oct. 5, 1970, 45/86633
Int. Cl. H02k *9/28*
U.S. Cl. 310—227 **2 Claims**



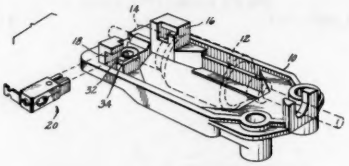
A device for cooling the collector portion of a rotary electric machine, including a brush adapted to be pressed with a predetermined pressure against a collector ring which is provided on a rotor shaft in such a manner as to rotate with the rotor while being in sliding engagement with the brush, the sliding portion being adapted to be cooled with a forced flow of cooling air, wherein the cooling air is made to flow in substantially the same direction as that in which the brush is compressed, whereby improved current flow characteristics can be established between the collector ring and the brush.

3,784,856

BRUSH HOLDER ASSEMBLY

Charles F. Preston, Brockport, N.Y., assignor to General Electric Company, Bridgeport, Conn.

Filed July 31, 1972, Ser. No. 276,675
Int. Cl. H02k *13/00*
U.S. Cl. 310—239 10 Claims



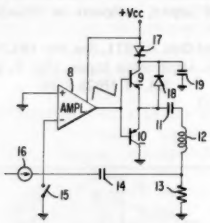
The invention is a motor brush holder assembly including a tubular holder member and a brush member freely slidable in the holder with spring means between the two biasing them apart. One of the members, generally the brush, has longitudinal surface groove means part of its length and terminating short of the brush end to form a stop. The other holder member has a fixed projecting means for slidable reception in the groove and the holder is deformable so the brush can be inserted past the stop so the brush is freely slidable in the holder and the stop prevents separation from the holder unless it is deformed. Thus, the entire assembly is preassembled for later use in the motor frame and only the actual functional parts alone form the preassembly.

3,784,857

TELEVISION DEFLECTION CIRCUIT WITH LOW POWER REQUIREMENT

Todd J. Christopher, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 16, 1972, Ser. No. 281,191
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 TD 9 Claims



A deflection circuit in which the retrace pulse rises above the circuit supply voltage and which pulse is recovered for providing energy for the deflection circuit.

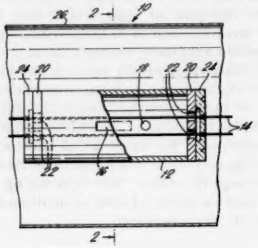
3,784,858

ION SOURCES

Joseph Franks, 26 Hamilton Rd., Ealing, London, England

Filed Nov. 24, 1972, Ser. No. 309,179
Int. Cl. H01g *17/16*
U.S. Cl. 313—63 13 Claims

An ion source comprising a right-circular cylindrical cathode having two anode rods extending through the cylinder and symmetrically disposed about its axis. An ion beam outlet aperture is formed in the cylindrical wall of the cathode, and



an inlet is provided in the cathode for introducing a gas therein.

3,784,859

DEFLECTION YOKE FOR USE ON CATHODE RAY TUBE

Minoru Morio, and Yoriyoshi Awata, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 18, 1972, Ser. No. 245,231
Claims priority, application Japan, Apr. 20, 1971, 46/30640
Int. Cl. H01j *29/70*
U.S. Cl. 313—75 3 Claims

A color picture tube deflection yoke having a core made in part from a material whose magnetic permeability is temperature sensitive to shift the deflection center of the yoke and thereby compensate for beam mislanding resulting from thermal expansion of the screen mask.

3,784,860

IMPROVEMENTS IN AND MOUNTINGS FOR RADIATION DETECTING DEVICES

Franklin H. Cocks, Waltham, and Herbert E. Bates, Sudbury, both of Mass., assignors to Tyco Laboratories Inc., Waltham, Mass.

Filed Sept. 29, 1971, Ser. No. 184,704
Int. Cl. H01j *39/30*
U.S. Cl. 313—93 21 Claims

Improved gas discharge radiation detecting devices have long life spans under severe environmental conditions and

under high vibration. A first, tubular electrode surrounds a second, elongated wire electrode with a hermetically sealed gas ionization chamber therebetween. A pair of electrode mounting means mount and tension the wire electrode through friction joints to provide sufficient tension to prevent electrical failure under severe vibration conditions. It has been found that electrical failure of such devices can be caused by vibration conditions which damage a protective surface oxide of the wire electrode and that proper mounting can eliminate such damage thereby greatly prolonging useful life.

3,784,861

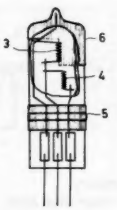
LAMP WITH OPAQUE SCREEN

Victor Rosallie Notelteirs, and Jan Goorissen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 805,309, March 7, 1969, abandoned. This application Feb. 25, 1971, Ser. No. 119,021

Int. Cl. H01j *5/08, 61/40;* **H01k** *1/26*

U.S. Cl. 313—117 **5 Claims**



A halogen incandescent lamp having on a portion of the bulb a black opaque coating of silicon and silicon dioxide.

3,784,862

METHOD AND APPARATUS FOR ELECTRON TUBES

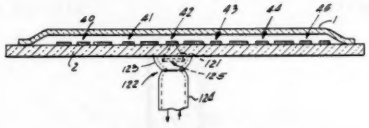
Araki Yoshitoshi, Yokohama; Yzuru Yanagisawa, Fujisawa, and Akira Nakayama, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sept. 7, 1971, Ser. No. 178,089

Claims priority, application Japan, Sept. 11, 1970, 45/91099

Int. Cl. H01k *1/52;* **H01j** *7/18, 17/26*

U.S. Cl. 313—174 **4 Claims**



Method and apparatus for accomplishing the getter treatment in an electron tube which has a small volume and wherein the getter holder and material is mounted in the tip-off tube through which the envelope of the electron tube is evacuated thus utilizing the volume of the getter tube rather than the volume of the electron tube to contain the getter holder and the getter material. The method and apparatus is particularly useful with indicator display tubes which utilize conductive segments of the cathodes and anodes mounted in a common plane and which are covered by a cover envelope such that the volume within the tube is relatively small. The air is removed from the tube through the tip-off tube and the ionized gas is inserted into the tube through the tip-off tube and the getter treatment is performed in the tip-off tube so as to absorb molecules of the non-noble and residual gases within the electron tube.

3,784,863

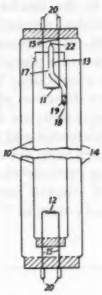
VAPOUR DISCHARGE LAMPS

Kenneth Scott, Lane, England, assignor to Thorn Electrical Industries Limited, London, England

Filed Jan. 11, 1973, Ser. No. 322,745

Int. Cl. H01j *61/24*

U.S. Cl. 313—174 **4 Claims**



The invention relates to improvements in low-pressure vapour discharge lamps, for example sodium vapour discharge lamps.

According to the invention a discharge tube for such a lamp is provided with an exhaust tube which extends into the discharge tube. The exhaust tube is closed at its tip within the discharge tube and is adapted to constitute a reservoir for vapourisable substance, such as sodium. Communication between the reservoir and interior of the discharge tube is provided by an aperture in the wall of the exhaust tube.

In lamps made with such discharge tubes, the reservoir helps to ensure even distribution of vapour within the discharge tube, thereby improving the intensity and uniformity of light emitted by the lamp.

3,784,864

COLD CATHODE DISCHARGE DISPLAY APPARATUS MANIFESTING MEMORY ACTION

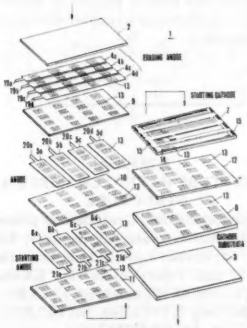
Rentaro Sasaki; Akinori Watanabe, both of Takasaki; Tatsuo Ogasawara, Tokyo; Satoshi Watanabe, and Hidetoshi Sogabe, both of Gyoda, all of Japan, assignors to Oki Electric Industry Company Ltd., Minato-ku, Tokyo, Japan

Filed Sept. 29, 1972, Ser. No. 293,574

Claims priority, application Japan, Sept. 30, 1971, 46-76702

Int. Cl. H01j *61/06*

U.S. Cl. 313—217 **5 Claims**



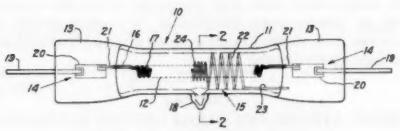
In a cold cathode display apparatus of the class comprising a plurality of opposed electrodes and a transparent envelope

containing the electrodes and filled with a luminous inert gas, there are provided a plurality of display units in the envelope. Each display unit comprises a plurality of first electrodes, a plurality of second electrodes, insulator spacer means disposed between the first and second electrodes, the spacer means being provided with a plurality of perforations which define independent discharge cells between the first and second electrodes, a plurality of starting anode electrodes respectively contained in the discharge cells, a plurality of starting cathode electrodes respectively contained in the discharge cells, a plurality of resistors respectively connected to the second electrodes and a plurality of erasing electrodes disposed near the first electrodes. The plurality of display units are arranged in the direction of lines, the erasing electrodes of respective display units are arranged in the direction of lines, and the first electrodes and the starting anode electrodes of respective display units are arranged in the direction of columns. The starting cathode electrodes and the second electrodes of respective display units are arranged in the direction of both lines and columns.

3,784,865
FILAMENT SUPPORT

Bruce E. Shanks, Wickliffe, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 4, 1972, Ser. No. 223,433
Int. Cl. H01j *1/98, 19/52;* **H01k** *1/24*
U.S. Cl. 313—274 **1 Claim**



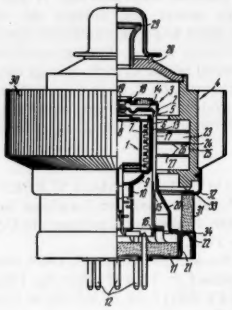
A wire support for the coiled-coil filament of a tubular incandescent lamp having a pinch seal in which the wire support is formed with two transverse helical sections of several turns each with the sections having different diameters, the one of smaller diameter receiving the filament and the one of larger diameter engaging the inner wall of the envelope, the support being provided with a longitudinal tail section sealed in the press. In assembly, the helical section of larger diameter is twisted to reduce its diameter to enable passing the envelope over the wire support.

3,784,866
ELECTRON TUBE HAVING CHAMBER ANODE STRUCTURE

Valery Nikolaevich Manyafov, Grazhdansky prospekt, 15 korpus 4, kv. 93; Anatoly Ivanovich Busheev, Kolomenskaya ulitsa, 27, kv. 14; Roman Lvovich Semenov, prospekt Engelsa, 60, kv. 7, and Valery Alexeevich Klevtsov, Apraxin pereulok, 21, kv. 69, all of Leningrad, U.S.S.R.

Filed July 7, 1972, Ser. No. 269,818
Int. Cl. H01j *21/14*
U.S. Cl. 313—299 **1 Claim**

An electron tube is disclosed having at least one grid positioned between the cathode and the chamber anode with the chambers thereof formed by fins arranged parallel to one another and perpendicularly to the anode surface opposite the



cathode. Each chamber is of a width given by the following formula:

$$b = 2\sqrt{\frac{\Delta U_{\min}}{U_a}}\,(U_a)^{3/4} \cdot \frac{1}{\sqrt{j\left[1 - \frac{1}{ch\left(1.58\frac{a}{b}\right)}\right]}},$$

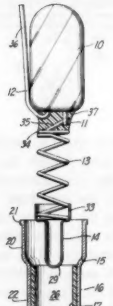
where

b = width of the chamber,
U_a = anode voltage other than zero,
$\Delta U_{\min}$ = a difference between anode voltage U_a and the minimum chamber potential, i.e., a potential drop in the chamber,
j = average density of the maximum anode current which flows via a surface passing through the centre of the chamber perpendicularly to its lateral inserts,
ch = hyperbolic cosine,
a = depth of the chamber.

3,784,867
LAMP

James N. Dupree, Los Angeles, Calif., assignor to Dupree, Inc., South El Monte, Calif.

Filed Oct. 6, 1972, Ser. No. 295,669
Int. Cl. H01j *5/45, 5/50*
U.S. Cl. 313—318 **2 Claims**



A lamp having a bulb fixed in the housing and a moving socket engaging pin spring loaded to an extended position. A

housing with an inner insulating sleeve molded in place in an outer metal sleeve with a cup-shaped conductor pin retained by the housing and receiving a spring welded to a bulb lead, with the spring-bulb lead connection encapsulated and with the bulb cemented in the housing with the other lead spot welded to the outer sleeve.

3,784,868

DEGAUSSING CIRCUIT FOR PORTABLE TELEVISION COLOR PICTURE TUBE

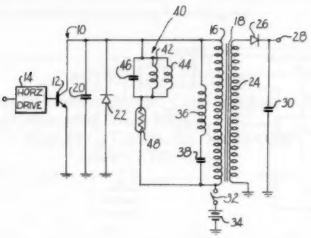
Kinya Shinkai, Yokohama; Yoshitaka Abe, Tokyo, and Masato Izumisawa, Yokosuka, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 20, 1972, Ser. No. 299,435

Claims priority, application Japan, Oct. 28, 1971, 46/100456 (utility model)

Int. Cl. H01f *13/00*

U.S. Cl. 315—8 **6 Claims**



A degaussing circuit for demagnetizing a color video tube in a portable television receiver in which the degaussing coil current is supplied through a thermistor from the horizontal output circuit of the portable television receiver.

3,784,869

VERTICAL CONVERGENCE CIRCUIT

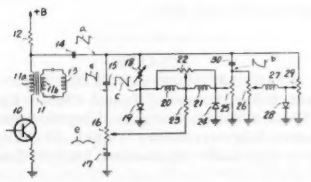
Michiaki Takahashi, Iwai, Japan, assignor to Victor Company of Japan, Ltd., Karagawa-ken, Japan

Filed Mar. 24, 1972, Ser. No. 237,679

Claims priority, application Japan, May 29, 1971, 45-18596; June 3, 1971, 45-39124; July 8, 1971, 45-50464; July 8, 1971, 45-50465; July 19, 1971, 45-53736

Int. Cl. H01j *29/50*

U.S. Cl. 315—13 C **13 Claims**



A vertical convergence circuit comprises a single saw-tooth waveform voltage source in a vertical deflection circuit, a variable resistor for regulation of the amplitude of a parabolic current which applies a saw-tooth waveform voltage to one terminal of a convergence coil circuit, and a variable resistor for tilt regulation of a parabolic current which applies a pulsive voltage obtained by differentiating a saw-tooth waveform voltage to the other terminal of the convergence coil circuit.

3,784,870

PROTECTION CIRCUIT

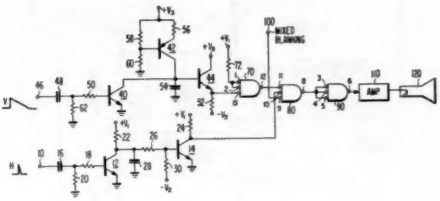
Denis Peter Dorsey, Levittown, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 7, 1972, Ser. No. 278,280

Claims priority, application Great Britain, Apr. 24, 1972, 19,017/72

Int. Cl. H01j *29/70*

U.S. Cl. 315—20 **6 Claims**



The circuit of the invention operates in conjunction with an imaging transducer to sense the loss of applied horizontal or vertical deflection signals, and to respond to such loss by changing the bias voltage on the transducer in a direction to turn "off" its electron beam.

3,784,871

CIRCUIT ARRANGEMENT FOR GENERATING A SAWTOOTH CURRENT THROUGH A DEFLECTION COIL

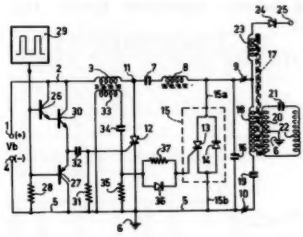
Pierre Vacher, St-Germain-en-Laye, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 13, 1972, Ser. No. 243,639

Claims priority, application France, May 4, 1971, 7116044

Int. Cl. H01j *29/70*

U.S. Cl. 315—27 TD **6 Claims**

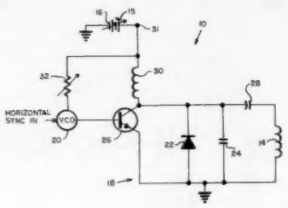


A circuit arrangement for generating a sawtooth current through a deflection coil including two switches. The series network of an inductor and a capacitor is arranged between the two switches, while a second inductor is arranged between the supply source and a junction of one switch and the series network. The network constituted by the two inductors and the capacitor has a resonant frequency which is preferably between 0.5 and 0.8 times the repetition frequency of the sawtooth current (the line frequency) and the said switch is a unipolar switch (a thyristor).

3,784,872
SCAN DEFLECTION CIRCUIT DEVICE

Donald N. James, St. Paul, Minn., assignor to Ball Brothers Research Corporation, Boulder, Colo.

Filed Sept. 2, 1971, Ser. No. 177,242
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 TD **9 Claims**

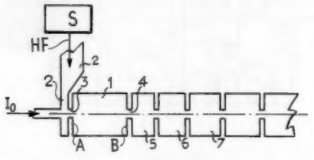


A circuit device for use in a multi-line rate image reproducing assembly such as, for example, a video monitor is disclosed herein. The device, which permits changing the line rate of the assembly without changing the horizontal dimensions of the reproduced image and which in normal operation requires only a single adjustment control for acheiving this end, includes circuitry connected with the adjustment control and responsive to a selected voltage level supplied from a source for producing, across the horizontal deflection coil of the image reproducing assembly, a scan deflection signal having both its peak amplitude and frequency of occurrence dependent upon the selected voltage level. A linear voltage controlled oscillator is provided and cooperates with the voltage source and single adjustment control for changing the deflection signal's frequency of occurrence without changing it peak-to-peak amplitude.

3,784,873
DEVICE FOR BUNCHING THE PARTICLES OF A BEAM, AND LINEAR ACCELERATOR COMPRISING SAID DEVICE

Dominique Tronc, and Hubert Leboutet, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Oct. 22, 1971, Ser. No. 191,763
Claims priority, application France, Oct. 30, 1970, 70.39261
Int. Cl. H01j *25/10*
U.S. Cl. 315—5.41 **5 Claims**



The bunching device in accordance with the invention is essentially constituted by a cylindrical cavity resonator, which advantageously replaces the conventional device encountered in linear accelerators, including a velocity-modulation cavity for modulating the particles and a drift space for bunching said particles.

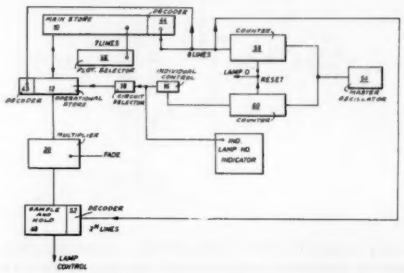
The length of this bunching cavity is associated with the velocity of the particles in said cavity and with the operating frequency of the accelerator.

A device of this kind, which is of small size and low cost, renders unnecessary the conventional control of amplitude and phase of the signals which are injected into the bunching device and the accelerator structure, which are coupled in a direct manner. Furthermore, it enables operation to be carried out under conditions of heavy current, whilst achieving good efficiency.

3,784,874
LIGHTING CONTROL SYSTEMS

James Howard Barrett, London, and Jack Kelleher, Wembley, both of England, assignors to Dynamic Technology Limited, Wembley, England

Filed Dec. 23, 1971, Ser. No. 211,509
Int. Cl. H05b *37/02, 39/06*
U.S. Cl. 315—294 **16 Claims**



Lighting control apparatus for controlling the brightness of a group of (typically 256) lamps in which a number of (typically 128) lighting plots comprising brightness control information are transferred in turn from a main store to an operational store and which includes time-division-multiplex means for controlling the brightness of the lamps in the group in accordance with a lighting plot in the operational store. Embodiments are described which include an "action" operational store and a "standby" operational store and means which may be manual or automatic for cross-fading control of the brightness of lamps from the action to the standby store, which is then designated the action store.

Lighting plots are built up in an operational store by storing brightness information for each individual lamp and transferring light plots to the main store.

3,784,875
STAGE LIGHTING CONTROL UNITS

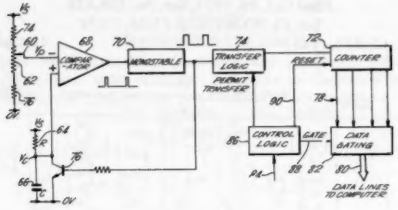
David Keith Baker, Farnham; Ronald Charles Eason, East Ewell; Richard Melville Gascoigne, Kingston-upon-Thames, and Andrew Schryver, Hartley Wintney, all of England, assignors to The Rank Organisation, Limited, London, England

Filed May 8, 1972, Ser. No. 251,272
Claims priority, application Great Britain, May 7, 1971, 13748/71
Int. Cl. H05b *37/00*
U.S. Cl. 315—294 **9 Claims**

A lighting control apparatus for stage lighting and the like in which lighting values are stored and handled entirely by digital techniques, the apparatus being based on a general-purpose digital computer.

The invention also provides a novel method of controlling crossfades from one lighting state to another which is

economical in its demands on data handling capacity, since it operates by defining the required changes as a given number



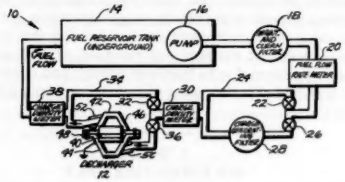
of increments thus permitting further control to be by means of addition and subtraction only. A novel clock circuit for use in this incremental cross-fading is described.

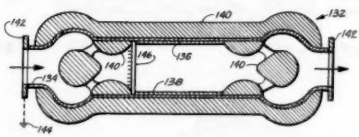
3,784,876

STATIC DECHARGER

Alexis Neal De Gaston, Orange, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Apr. 17, 1972, Ser. No. 244,698
Int. Cl. H05f *3/02*
U.S. Cl. 317—2 R **18 Claims**





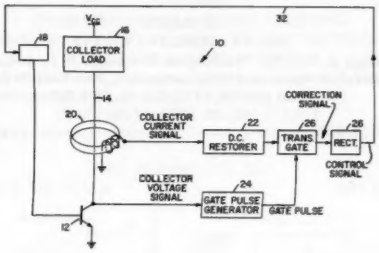
Electrostatically charged nonconducting fluid is rendered temporarily conductive by subjecting the fluid to ionizing radiation of selected radioactive material. Ion pairs are created by the radiation and a predetermined density of ions is produced whereby the fluid is made sufficiently conductive so that it practically cannot hold a charge. While conductive, any acquired charge is free to drain to ground. A volume ionizing embodiment of the invention includes radioactive material disposed in a grounded grating configuration through which the fluid flows and is ionized, and any fluid charge is largely drained to ground through the grating. In another version of the invention, a laminar ionizing embodiment includes radioactive material disposed in a sleeve configuration through which the fluid flows and an adjacent layer of fluid having an opposite charge to its fluid core is produced, and charge neutralization is achieved by subsequent mixing of the fluid layer and core.

3,784,877

RF POWER TRANSISTOR SECONDARY BREAKDOWN PROTECTION CIRCUIT

David Cowell, Webster, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed June 5, 1972, Ser. No. 259,564
Int. Cl. H02h *7/20*
U.S. Cl. 317—33 R **10 Claims**



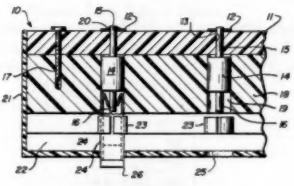
A protection circuit for RF power transistors to prevent secondary breakdown includes gate means to monitor both the collector current and collector voltage. A gate pulse generated each time the collector voltage exceeds a preset value is used to gate a wave form derived from the transistor collector current. When the current wave form is in phase with the gate pulse and is of sufficient amplitude, the gate means provides a controlled voltage to bias off the transistor power supply for purposes of reducing the output power to safe operating levels.

3,784,878

MATRIX ASSEMBLY

John P. Neu, Berkeley, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed July 6, 1972, Ser. No. 269,346
Int. Cl. H05k *1/04*
U.S. Cl. 317—101 CE **10 Claims**



A matrix assembly comprised of a plurality of electrical components (diodes) having one lead or electrical connector thereof permanently or semi-permanently attached to a printed circuit board and in electrical contact with the printed circuit conductors on it. The electrical components are disposed and retained within openings extending through a spacer, in a fashion such that the other lead or electrical connector thereof functions as a plug to receive a contact pin receptacle. The openings in the spacer function to support the electrical components and to guide the contact pin receptacles into engagement with the electrical connectors of the electrical components. In this fashion, an electrical path may be readily made, or interrupted, to program or encode the matrix circuit, by simply affixing an electrical component into

the appropriate ones of the openings in the spacer and electrically connecting the one lead thereof. Upon being plugged into the contact pin receptacles, the electrical interconnections are established. The contact pin receptacles can be affixed to another support member such as, for example, another printed circuit board.

3,784,879

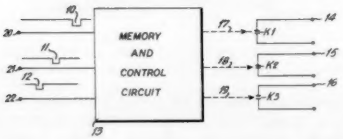
RELAY MEMORY CIRCUIT

William J. Dukette, Washington Township, N.J., assignor to American Associated Cybernetics, Inc., New York, N.Y.

Filed July 27, 1972, Ser. No. 275,527

Int. Cl. H01h *47/00*

U.S. Cl. 317—136 **11 Claims**



A circuit comprised of a plurality of relays, all of which are connected in parallel. The energization of any one relay automatically deenergizes and unlatches any previously latched relay.

3,784,880

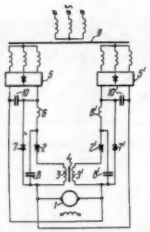
APPARATUS FOR EFFECTING PULSE-WISE CONTROL OVER A DIRECT CURRENT MOTOR

Vladimir Ivanovich Stakhno, Dnepropetrovsk, U.S.S.R.

Filed Aug. 2, 1971, Ser. No. 168,127

Int. Cl. H02k *29/00*

U.S. Cl. 318—138 **4 Claims**



Systems for effecting control over direct-current electric drives, and, more particularly, to pulse-type control means included into the circuits of the armature windings of motors.

Apparatus for effecting pulse-wise control over a direct-current motor, consists in connecting the winding of the armature of the motor in parallel with two opposing rectifiers through limiting saturation chokes, thyristors and power diodes, the thyristors being electrically connected to each other through a two-windings transformer and capacitor means, the inputs of the recrifiers being connected to the secondary windings of the supply transformer.

3,784,881

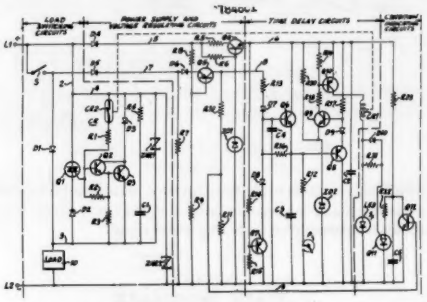
OFF-DELAY TIMING APPARATUS

Lawrence E. Van Horn, Greendale; William H. Elliot, Whitefish Bay, and Russell P. Schuchmann, Racine, all of Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Oct. 10, 1972, Ser. No. 298,429

Int. Cl. H03k *17/28, 17/66, 17/74*

U.S. Cl. 317—141 S **10 Claims**



A device for supplying current to a load from a relatively wide range of D.C. and A.C. voltage sources, and affording time delay-OFF mode of deenergization upon opening of a selector switch. An electric illuminous indicating device provides indication of steady state and time delay-OFF modes of operation by steady and blinking illumination conditions. Provision is made to prevent improper operation of the device when the leakage current resistance shunting the open selector switch circuit exceeds, for example, 40,000 ohms. Unwanted operation due to transient voltage and current conditions is provided by extensive use of suppression and blocking devices.

3,784,882

SOLENOID ASSEMBLY

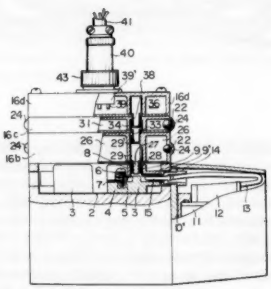
Hideo Niwa, Nagoya, Japan, assignor to Yuken Kogyo Limited, Kanagawa-ken, Japan

Filed Sept. 27, 1972, Ser. No. 292,512

Claims priority, application Japan, Sept. 30, 1971, 46/76680

Int. Cl. H01h *47/02*

U.S. Cl. 317—157 **8 Claims**



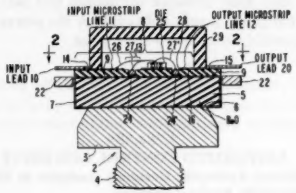
In a solenoid assembly of the type wherein a solenoid coil is connected to an external conductor, through a terminal connector there are provided an insulation substrate including a connector connected to the external conductor and a contact piece spaced apart therefrom and connected to the coil, and a plurality of contact plates adapted to be selectively combined with the insulation substrate. The contact plates are provided

with circuit elements of different type, each circuit element bridging the connector and the contact piece when a selected contact plate carrying the circuit element is combined with the insulation substrate.

3,784,883
TRANSISTOR PACKAGE

David M. Duncan, San Francisco and Joseph H. Johnson, Sunnyvale, both of Calif., assignors to Communications Transistor Corporation, San Carlos, Calif.

Filed July 19, 1971, Ser. No. 163,981
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R **6 Claims**

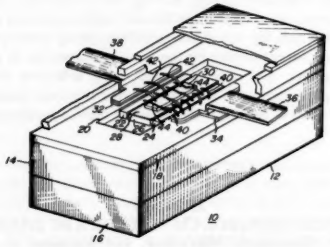


In a transistor packaging having an input, an output and a common lead, the common lead includes a pair of terminal strip portions disposed on opposite sides of the transistor die. An array of generally parallel common connector wires interconnect both of the common lead terminal strip portions and one of the base or emitter electrode structures on the transistor die. The other one of the emitter or base electrode structures is connected to the input lead via the intermediary of an array of wires interdigitated with the array of common connector wires. In this manner, the common lead inductance of the transistor package is reduced resulting in improved gain and/or r.f. stability of the transistor.

3,784,884
LOW PARASITIC MICROWAVE PACKAGE

Demir S. Zoroglu, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 3, 1972, Ser. No. 303,466
Int. Cl. H01l 5/00
U.S. Cl. 317—234 R **14 Claims**

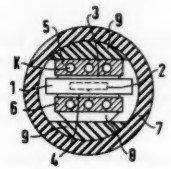


A low parasitic microwave transistor package is provided with a pair of parallel rectangular bonding rails extending from the metal header. A first insulating body having a metal film thereon is positioned closely between the two rails and is attached to the header. A microwave transistor die may be attached to the metal film on the insulating body. A second insulating body having an aperture therein is attached to the metal base, the aperture accommodating the two bonding rails and the first insulating body positioned therebetween. The alumina disk has two metal bonding pads formed thereon. A very low inductance, low resistance connection from the emitter of a transistor to the metal base may be provided by means of a plurality of parallel stitch bonds from the emitter bonding pads on the transistor die to the bonding rails. Balanced feeding may be provided to the emitter, base and collector.

3,784,885
SEMICONDUCTOR ASSEMBLY HAVING SEMICONDUCTOR HOUSING AND CONTACT DISCS DISPOSED WITHIN A TUBE

Erwin Weidemann, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany

Filed Nov. 30, 1972, Ser. No. 310,876
Claims priority, application Germany, Dec. 3, 1971, P 21 60 001.1
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R **10 Claims**

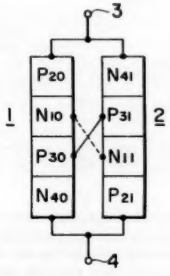


A semiconductor arrangement is disclosed for use particularly with thyristors and in which the semiconductor bodies are arranged in disc-shaped housings having cooled electrical connecting elements. The housings and connecting elements are inserted into a tube, which may serve as a protective enclosure to establish a pressure connection and partially to conduct the coolant. By arranging flat contacts at the outside wall of the tube a plug-in component of compact design is obtained.

3,784,886
BIDIRECTIONAL SWITCHING SEMICONDUCTOR DEVICE

Kenji Miyata, and Masahiro Okamura, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 25,119, April 2, 1970, abandoned. This application Oct. 3, 1972, Ser. No. 294,577
Claims priority, application Japan, Apr. 4, 1969, 44/25562
Int. Cl. H01l 9/12, 11/10, 19/00
U.S. Cl. 317—235 R **8 Claims**



A bidirectional switching semiconductor device comprising a pair of four layer switching semiconductor devices which are

connected in reverse parallel with each other; the base layers of respective devices being electrically connected to each other, thereby improving the turn-on characteristics of the device.

3,784,887

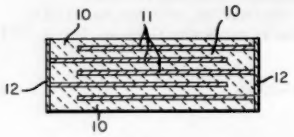
PROCESS FOR MAKING CAPACITORS AND CAPACITORS MADE THEREBY

John Leo Sheard, Williamsville, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 26, 1973, Ser. No. 354,840

Int. Cl. H01g *1/01*

U.S. Cl. 317—258 **8 Claims**



An improved process for making multilayer monolithic capacitors, using metallizations which can be cofired with reactive dielectric materials at elevated temperatures. The metallizations contain critical proportionate amounts of Pt and/or Au and Pd, and optionally Ag. Also the resultant capacitors.

ERRATUM

For Class 318—138 see:
Patent No. 3,784,880

3,784,888

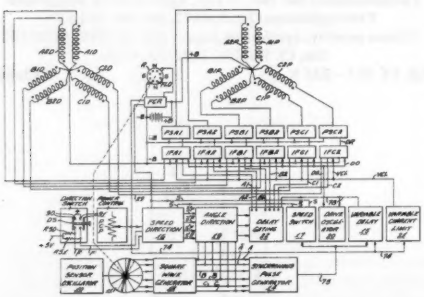
CONTROL FOR COMMUTATORLESS MOTOR

Allois F. Geiersbach, Milwaukee, and Frederick A. Stich, Hales Corners, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed June 26, 1972, Ser. No. 266,286

Int. Cl. H02k *29/00*

U.S. Cl. 318—138 **52 Claims**



Three stator phase windings of a commutatorless motor are energized from a battery through power transistors. A capacitive rotor position sensor coupled to the motor rotor derives three phase square wave rotor position signals displaced 120° apart at a frequency proportional to motor speed. Three sets of logic gates receive rotor position signals as inputs and control the conduction interval of the transistors. When a motor direction switch is actuated forward, first gates of the three logic sets are opened to enable the transistors during first rotor position signals displaced 120° to generate a clockwise rotating stator field, and when the direction switch is actuated to the reverse position, second gates are opened to enable the transistors during second rotor position signals displaced 180° from the first signals to thereby shift the stator field 180° and thus reverse rotor direction. Third gates of the logic sets are opened when the motor attains a predetermined speed to enable the transistors during rotor position signals shifted 60° from the first signals to thereby vary the motor torque angle. A plurality of timing pulses are generated during each rotor position signal, variable delay means generate delay pulses from the timing pulses after a selectively adjustable time delays the delay pulses open delay gates disposed between the logic gates and the power transistors, and motor speed controlling means vary the time delay between the timing and delay pulses to thereby change the power duty cycle of the power transistors and thus control motor speed and torque.

3,784,889

MOTORIZED CONTROL ROD DRIVE

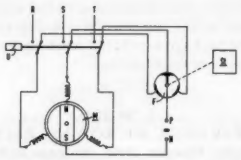
Ulrich Michael, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Continuation-in-part of Ser. No. 870,575, Nov. 20, 1969, abandoned. This application Oct. 1, 1970, Ser. No. 77,097

Claims priority, application Germany, Oct. 4, 1969, P 18 09 845.8

Int. Cl. H02p *1/52*

U.S. Cl. 318—171 **3 Claims**



A variable speed drive for nuclear reactor control rods includes a synchronous motor having a permanent magnet rotor and stator pole windings, and means for selectively connecting the stator pole windings to a multiphase rotating current source for relatively rapidly moving the control rod and to a direct current source for stepwise and relatively slowly moving the control rod, the stator pole windings being connectible to the direct current source by the connecting means in a selective sequence and direction and at a selective winding-switching frequency. A blocking device prevents inadvertent upward travel of the control rods at the rapid operating speed.

3,784,890

PULSE CONTROL CIRCUIT FOR A DC LOAD

Allois F. Geiersbach, Milwaukee, and Raymond G. Price, Franklin, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

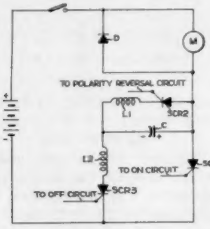
Filed Dec. 12, 1972, Ser. No. 314,341

Int. Cl. H02p *5/16*

U.S. Cl. 318—345 **4 Claims**

A circuit for providing controlled pulses of direct current to vary the speed of a direct current motor. A main controlled rectifier applies current to the motor. A commutation circuit consisting of an inductor, a capacitor and another controlled

rectifier turns off the main controlled rectifier by reversing its polarity. Another circuit, referred to as a "ring-around" circuit, consisting of another inductor and controlled rectifier reverses the polarity of the commutating capacitor preparatory to the commutation of the main controlled rectifier.

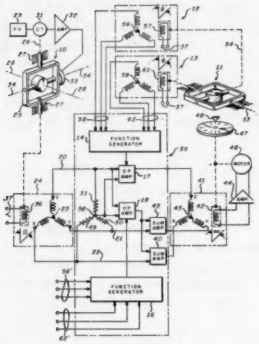


3,784,891

MULTIAXES TWO CYCLE GIMBAL ERROR CORRECTOR

William W. Burmeister, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 25, 1971, Ser. No. 109,422
Int. Cl. G05b *11/01*
U.S. Cl. 318—633 **23 Claims**



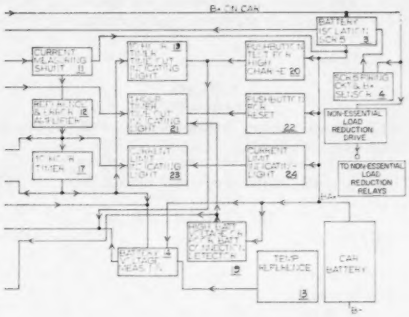
Apparatus for compensating for gimbal error occurring in a directional gyroscopic data transmission system under simultaneous conditions of pitch and roll attitude of the aircraft by the provision of an electrical circuit connected in a three-branch line coupling the gyro transmitter to an electrical receiver at which the output data is produced. The compensating circuit includes a pair of amplifiers connected across one branch of the three-branch line. The signals provided at the outputs of the respective amplifiers are modified in accordance with discrete functions of aircraft pitch and roll attitude, the one amplifier output being connected into the one branch of the line across which the amplifiers are connected while the other amplifier output is coupled into the two additional branches of the line thereby providing the receiver with electrical heading signals compensated for the gimbal error.

3,784,892

BATTERY CHARGING SYSTEM FOR EMERGENCY BATTERY SYSTEMS

William B. Zelina, Edinboro, Pa., assignor to General Systems, Inc., Erie, Pa.

Filed May 20, 1971, Ser. No. 145,388
Int. Cl. H02j *7/06, 7/34*
U.S. Cl. 320—40 **19 Claims**



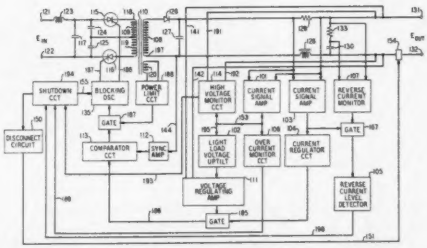
A completely static battery charging system which recognizes the battery charged state and also the battery operating temperature where a solid state valve is used to isolate the battery from the load; said valve rendered conductive instantly when the load voltage drops below a predetermined value. Means is included for decreasing the charge rate to the float voltage that will maintain full charge on the battery at all temperatures after it has been fully charged. Protective means is included to prevent either battery or system damage should an abnormal battery condition develop, said protective means including individual shorted cells, improper solution level, abnormal battery impedance, and poor electrical connections either in the individual cells or the interconnecting electrical connections.

3,784,893

HIGH VOLTAGE SHUTDOWN PROTECTION CIRCUIT WITH BIAS ARRANGEMENT TO DECREASE THE VOLTAGE SHUTDOWN POINT WITH INCREASING LOAD

Robert Rando, Brooklyn, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 10, 1973, Ser. No. 322,406
Int. Cl. H02m *1/18*
U.S. Cl. 321—11 **6 Claims**



A current and voltage regulated DC to DC converter is designed with protection features to permit its operation in parallel with like DC to DC converters. The features are

designed to assure shutdown protection against overcurrent and overvoltage conditions and to assure that each converter will contribute a current to the common load. The protection features include a selective high voltage shutdown to shut down only the converter causing an overvoltage and an overcurrent protection circuit to supersede the normal current regulation in response to a fault condition. A reverse current shutdown circuit protects the common load from faults and short circuits internal to the converter circuit. These protection features permit the converters to operate in parallel without shutting down the entire system should an individual converter malfunction.

3,784,894

ALTERNATORS

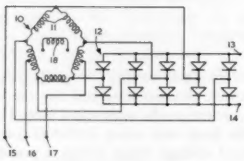
Cyril Silvertown, London, England, assignor to Rotax Limited, Birmingham, England

Filed June 5, 1972, Ser. No. 259,795

Claims priority, application Great Britain, June 11, 1971, 27411/71

Int. Cl. H02m *7/44*

U.S. Cl. 321—47 **3 Claims**



An electrical power supply system comprising an alternator having a closed output winding divided into at least five phase windings and including an equal number of pairs of diode rectifiers for producing a d.c. output. Tappings are provided on the winding for additionally providing a balanced multiphase alternating current output.

3,784,895

DEVICE FOR CONVERTING THE ELECTRICAL ENERGY OF A THERMIONIC GENERATOR

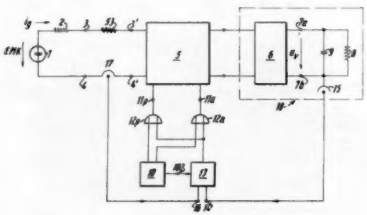
Manfred Depenbrock, Bochum-Stiepel, Germany, assignor to Brown, Boveri & Cie AG, Mannheim, Germany

Filed Aug. 21, 1972, Ser. No. 282,039

Claims priority, application Germany, Aug. 21, 1971, P 21 42 059.7

Int. Cl. H02p *13/04*

U.S. Cl. 322—2 R **4 Claims**



Device for converting electrical energy of a thermionic generator includes a load and a choke for smoothing current produced by the generator, a p-pulse inverter electrically connected between the load and the smoothing choke, the load being of such value that the generator voltage (u_g), is determined by the load voltage (u_r), the inverter includes semiconductor rectifiers, control means electrically connected to the inverter and adapted to cut off the same, at least two of the semiconductor rectifiers being series connected in the current path and being feedable with control signals p times during one period of the inverter output voltage simultaneously for a time interval respectively dependent upon the generator current (i_g) and on the load voltage (re_r).

3,784,896

EQUIPMENT FOR THE AUTOMATIC RESYNCHRONIZATION OF A SYNCHRONOUS GENERATOR

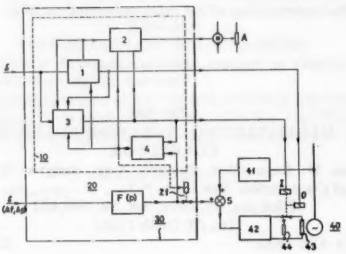
Josip Lakota, Luzern, Switzerland, assignor to Aktiengesellschaft Brown Boveri & Cie, Baden, Switzerland

Continuation of Ser. No. 134,741, April 16, 1971, abandoned. This application Dec. 22, 1972, Ser. No. 317,766

Claims priority, application Switzerland, Apr. 20, 1970, 5853/70

Int. Cl. H02p *9/44*

U.S. Cl. 322—20 **4 Claims**



Apparatus for effecting automatic resynchronization of a synchronous generator in the event that it falls out of synchronism includes a stabilization circuit which produces an output signal that correspondingly influences the excitation voltage whenever the slip lies within a range determined by a given relationship between the rated frequency of the generator, the inertia constant of the machine group that includes the generator and the maximum value of the synchronous moment.

3,784,897

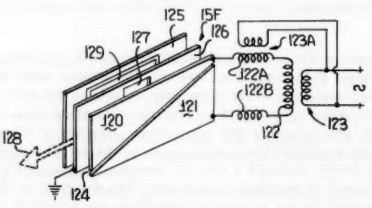
CAPACITOR TRANSDUCER

George Ogilvie Norrie, Bromham, England, assignor to Landis Tool Company, Waynesboro, Pa.

Continuation-in-part of Ser. No. 7,187, Jan. 30, 1970, abandoned. This application Feb. 17, 1972, Ser. No. 227,156

Int. Cl. H01g *5/06, 5/12, 5/14*

U.S. Cl. 323—93 **19 Claims**



A capacitive transducer in which a pair of exciter electrodes connected to an AC source are disposed in common planes to present a gap. A pick-off electrode is disposed in another plane and extends on either side of the gap. A conductive

screen is interposed between the exciter electrodes and the pick-off electrode and is connected to ground potential so as to block capacitive coupling between the exciter electrodes and the pick-off electrode except as between discrete areas of the exciter electrodes and an opposite area of the pick-off electrode exposed or coupled through an aperture in the screen.

3,784,898

METHOD FOR REDUCING BOREHOLE SIGNALS IN NUCLEAR MAGNETIC LOGGING

Henry C. H. Darley, and Joseph D. Robinson, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 16, 1972, Ser. No. 226,988
Int. Cl. G01n *27/78*
U.S. Cl. 324—0.5 R **6 Claims**

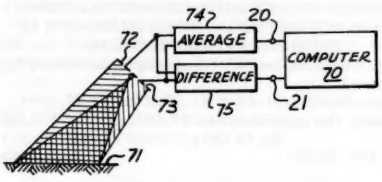
In a nuclear magnetic logging system a method for reducing the proton free-precession signal emanating from the borehole fluids by replacing the borehole fluid with a fluid containing at least 0.10 lbs/bbl of fluid of magnetized magnetite. The magnetite is first mixed with a fluid to form a concentrated mixture or slurry and the slurry passed through a magnetic field to magnetize the magnetite. The concentrated slurry is then mixed with additional fluid to provide a fluid for use in displacing the borehole fluid.

3,784,899

METAL DETECTION SYSTEM

Gregory T. Chalfin, Pasadena, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Filed Feb. 26, 1970, Ser. No. 17,986
Int. Cl. G01v *3/12*
U.S. Cl. 324—6 **14 Claims**



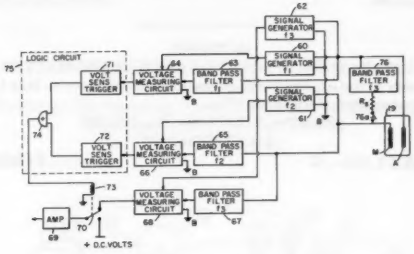
In accordance with the present disclosure, the probability of the presence of metal in a predetermined region is determined by deriving representations of first and second antenna temperatures, each representative of the strength of received microwave signals of different polarizations. The probability of the presence of metal is determined by ascertaining the existance of a change in the antenna temperature of one polarization which is not coincident, in time, with a change in the antenna temperature of the other polarization. One method for ascertaining the probability of the presence of metal resides in deriving a representation of the average of the first and second antenna temperatures and a representation of the difference of the first and second antenna temperatures. A ratio is obtained by dividing the representation of the average of the first and second antenna temperatures by the representation of the difference between the first and second antenna temperatures to determine a representation of the probability of the presence of metal. One feature of the present invention resides in the provision of analog computer means for carrying out the process in accordance with the present invention.

3,784,900

PLURAL FREQUENCY BOREHOLE METHODS AND APPARATUS FOR INVESTIGATING EARTH FORMATIONS

Nick A. Schuster, Darien, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Division of Ser. No. 824,981, May 15, 1969, Pat. No. 3,601,692. This application Jan. 11, 1971, Ser. No. 105,682
Int. Cl. G01v *3/18*
U.S. Cl. 324—10 **10 Claims**



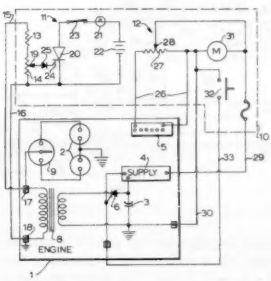
In accordance with illustrative embodiments of the present invention, a well tool having wall-engaging pad members is moved through a borehole. Current is supplied to a current electrode A on each pad member and the resulting potential on a nearby electrode M on each pad member is measured to provide a measure of formation resistivity. A shunt resistor is connected between the A and M electrodes of each pad member and has a resistance value suitable to enable the system to provide reasonably accurate measurements when the A and/or M electrodes fail to make reasonably good electrical contact with the formation. However, when the contact resistance between the A and M electrodes is so bad that genuine resistivity measurements cannot be made, the measuring system will produce very high, off-scale measurement values to indicate such an occurrence. In another embodiment of the invention, the electrodes are energized with current at a plurality of frequencies to enable separate measurements to be made. These measurements when utilized in a desirable manner, can enable a relatively authentic resistivity measurement to be obtained.

3,784,901

CAPACITOR DISCHARGE IGNITION SYSTEM TESTING APPARATUS

Arnold W. Miller, New Berlin, and William D. Larson, Jr., Franksville, both of Wis., assignors to Electro-Specialties, Inc., New Berlin, Wis.

Filed Dec. 22, 1972, Ser. No. 210,842
Int. Cl. G01m *15/00*
U.S. Cl. 324—16 R **8 Claims**



A potentiometer with leads interconnects to the conventional 12 volt battery. The potentiometer tap is connected to

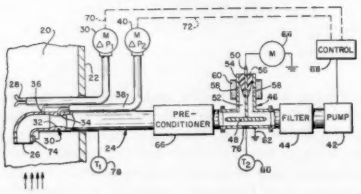
the capacitor charging terminals of a capacitor discharge ignition system with a meter for setting to a selected charging level. A test switch grounds connects the controlled rectifier gate for discharging of the capacitor through the ignition system pulse transformer. A relatively large dropping resistor in series with a low voltage selection potentiometer is connected to the transformer. A self-controlled rectifier has its gate connected to the selection potentiometer tap in series with a diode. An output circuit including a lamp and a low voltage battery responds to the selective triggering of the test rectifier.

3,784,902

APPARATUS FOR SENSING PARTICULATE MATTER

Henry J. Huber, Newton Highlands, Mass., assignor to Ikor Incorporated, Burlington, Mass.

Filed Dec. 8, 1971, Ser. No. 206,084
Int. Cl. G01r *5/28*
U.S. Cl. 324—32 **2 Claims**



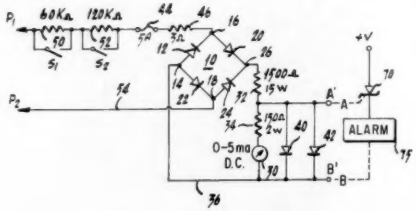
Apparatus for sensing particulate matter in a gas stream and having a sampling probe tube with a Pitot tube for measuring the velocity of the gas stream. A Venturi arrangement is provided inside the probe tube for measuring the velocity of the sample stream taken by the probe, so that the two velocities can be matched to provide isokinetic sampling. The sensor used is a pair of coaxial electrodes and the sensor includes an arrangement for mixing air into the sample stream adjacent the electrodes to minimize deposition of the particulate matter from stagnant volumes of gas.

3,784,903

LEAKAGE DETECTOR FOR DETERMINING POSSIBLE SHOCK HAZARDS TO HUMANS

Lucius Ponder Thomas, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 10, 1970, Ser. No. 88,362
Int. Cl. G01r *31/02, 19/16*
U.S. Cl. 324—51 **4 Claims**



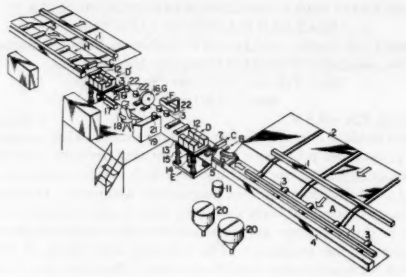
A full-wave rectifier bridge circuit is coupled to a current reading meter by a resistor approximating the body load resistance of a human being. The meter provides an "up scale" indication for electrical sources supplying alternating power or direct current powers of either polarity, and is useful in performing leakage current tests on electrical appliances.

3,784,904

A.C. ENERGIZED MAGNETIC PARTICLE FLAW DETECTOR WITH MEANS TO RAISE AND LOWER ELECTROMAGNETS FROM PATH OF WORKPIECE

Takenobu Suzuki; Buemon Nagashima, both of Tokyo; Masayoshi Inoue, and Yoji Ito, both of Yokosuka City, all of Japan, assignors to Tokushu Toryo Co. Ltd., Tokyo, Japan

Filed Sept. 1, 1970, Ser. No. 68,621
Int. Cl. G01r *33/12*
U.S. Cl. 324—38 **2 Claims**



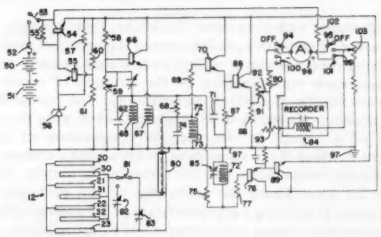
An arrangement for continuous magnetic flaw detection for steel materials comprising spraying magnetic particles suspended in a liquid over a steel material under inspection such as a long square billet while said material is moved just before being magnetized, and magnetizing the particle-sprayed material according to by an alternating magnetic field of a magnetizing device including an alternating current electromagnet without bringing the inspected material into contact with the magnetizing system.

3,784,905

APPARATUS FOR DETERMINATION OF THE DENSITY OF IN-PLACE MATERIALS BY MEASUREMENT OF THEIR DIELECTRIC STRENGTH

Lyman L. Blackwell, Denver, Colo., assignor to Soiltest, Inc., Evanston, Ill.

Continuation-in-part of Ser. No. 110,074, Jan. 27, 1971, abandoned. This application Nov. 29, 1972, Ser. No. 310,588
Int. Cl. G01r *27/26*
U.S. Cl. 324—61 QS **3 Claims**



An apparatus for measuring the dielectric properties of materials to thereby determine density, weight per unit of volume, thickness or the like. A special application is shown to determine the thickness, weight, roughness and density of bituminous pavement. The instrument includes a plurality of

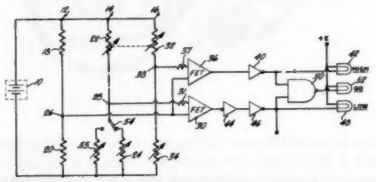
runners, some of which are vertically displaced relative to the others to form a capacitor in a tuned circuit. The instrument is slowly drawn across the surface of the material to be tested and variations in the detuning of the circuit are amplified and recorded whereby the density, thickness or the like can be instantly determined.

3,784,906

BRIDGE HAVING MULTIPLE NULLS

Donald S. Ironside, King of Prussia, Pa., assignor to James G. Biddle Company, Plymouth Meeting, Pa.

Filed Nov. 1, 1971, Ser. No. 194,400
Int. Cl. G01r *27/02*
U.S. Cl. 324—62 **9 Claims**



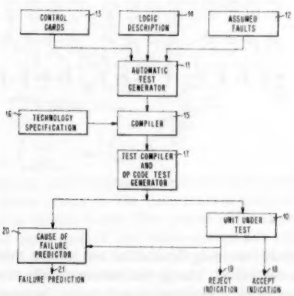
A multiple null bridge has more than two parallel branches, all of the branches being divided into two series portions of predetermined resistance ratio, except the first branch which contains a known resistance and means for connecting an unknown resistance in series with the known resistance. High input impedance d.c. null-detecting amplifiers all have one input terminal connected between the known and unknown resistance in the first branch with the other input terminal of each amplifier being connected between the respective series portions of different ones of the other parallel branches. The amplifiers are of high input impedance type so that they will not load the voltage divider branches in off-null condition.

3,784,907

METHOD OF PROPAGATION DELAY TESTING A FUNCTIONAL LOGIC SYSTEM

Edward Baxter Eichelberger, Purdy Station, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 16, 1972, Ser. No. 298,071
Int. Cl. G01r *27/00*
U.S. Cl. 324—57 DE **9 Claims**



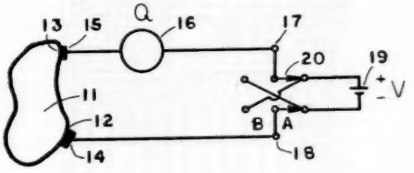
Propagation delay testing is performed on a generalized and modular logic system that is utilized as an arithmetic/logical unit in a digital computer. Each arithmetic/logical unit of a computer is formed of arrangements of combinational logic networks and storage circuitry. The storage circuitry has the capability for performing scan-in/scan-out operations independently of the system input/output and controls. Using this scan capability, the method of the invention provides for the state of the storage circuitry to be preconditioned and independent of its prior history. Selected propagation paths through the system circuitry are sensitized by test patterns from an automatic test generator. By altering selected inputs and cycling controls applied to the networks of combinational logic and their respective associated storage circuitry, propagation delay indications through the selected paths are obtained to determine the status of these path delays through the logic system.

3,784,908

ELECTRICAL CONDUCTIVITY MEASUREMENT METHOD AND APPARATUS

Weston Arthur Anderson, 763 La Para Ave., Palo Alto, Calif.

Filed Apr. 9, 1973, Ser. No. 348,913
Int. Cl. G01r *27/02*
U.S. Cl. 324—62 **11 Claims**



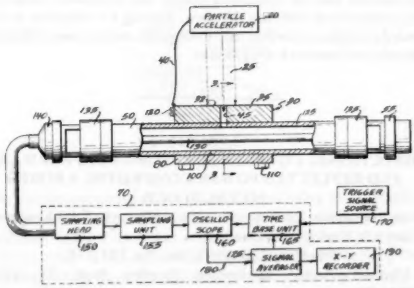
A method and apparatus is disclosed for minimization of the effect of contact potential and polarization at the electrodes while making electrical conductivity measurements of animal tissue samples. A current driven by an alternating polarity voltage source is passed through the sample. The polarity of the voltage source is reversed after a predetermined amount of charge has passed through the sample such that in one complete cycle equal amounts of charge have passed through the sample in opposite directions. The value of the sample conductivity is determined by the frequency of the alternating polarity voltage source.

3,784,909

PICOSECOND BEAM MONITOR

Dale W. Schutt, South Bend, Ind., and Gerhard O. Beck, Berlin, Germany, assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Jan. 23, 1973, Ser. No. 325,961
Int. Cl. G01n *27/00*
U.S. Cl. 324—71 EB **7 Claims**



Current in the beam of a particle accelerator is monitored with picosecond resolution by causing the beam to impinge

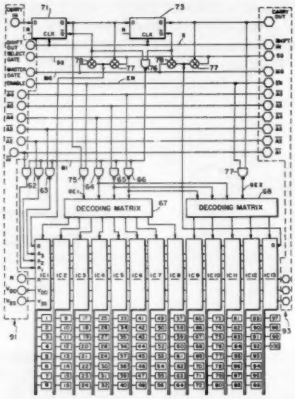
upon the center conductor of a coaxial line, generating a pulse of electromagnetic energy in response thereto. This pulse is detected by means such as a sampling oscilloscope.

3,784,910

SEQUENTIAL ADDRESSING NETWORK TESTING SYSTEM

Tage Peter Sylvan, Milton, Mass., assignor to Teradyne, Inc., Boston, Mass.

Filed July 13, 1972, Ser. No. 271,268
Int. Cl. G01r *15/12*
U.S. Cl. 324—73 AT **4 Claims**



The testing apparatus disclosed herein is adapted to test backplane wiring so as to determine if all desired connections exist and whether any undesired connections may be present. Such backplanes typically comprise a multiplicity of terminal points which may be interconnected in arbitrary manner to form a plurality of networks of connected points. The tester employs an addressable switching and memory unit for each terminal point. When addressed, each point is first connected to a first bus and, when the addressing is terminated, is thereafter connected to a second bus, this second connection being maintained under the control of the memory or latch associated with each switching unit. Prior to being addressed, each point is in effect isolated by the switching unit and allowed to float in potential. As the successive points in a given network are addressed, the system tests for continuity between the first and second buses to determine if the desired connections exist. After all terminal points which should be in the selected network have been latched into connection with the second bus, all remaining points are commonly switched into connection with the first bus. Testing for isolation at this time determines whether any undesired connections affecting the selected network are present.

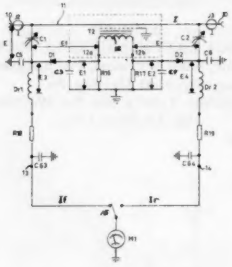
3,784,911

DIRECTIONAL COUPLER FOR MEASURING FORWARD AND REFLECTED POWER COMPRISING A BORED METAL BLOCK

Sven Ramstrom, Lyckeby, Sweden, assignor to Karlskronavarnet AB, Karlskrona, Sweden

Filed Sept. 20, 1971, Ser. No. 181,775
Claims priority, application Sweden, Sept. 21, 1970, 12806/70
Int. Cl. G01r *21/12*
U.S. Cl. 324—95 **4 Claims**

A directional coupler for measuring forward and reflected power in a high frequency transmission line, said coupler comprising a number of components arranged and fixed in a metal



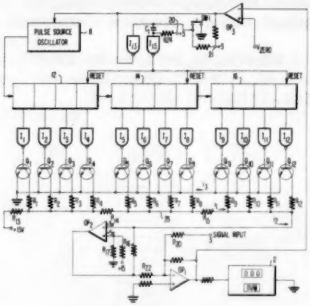
component block provided with bores for the separate components.

3,784,912

AUTOMATIC ZERO DEVICE

Harold R. Van Aken, Livingston Manor, N.Y., assignor to Kollmorgen Corporation, Hartford, Conn.

Filed Aug. 11, 1972, Ser. No. 279,960
Int. Cl. G01r *1/02, 17/06*
U.S. Cl. 324—130 **2 Claims**



An automatic zeroing device for use with a measuring instrument is described. The device automatically causes the instrument to read a predetermined value, termed the zero value, in response to an input signal, regardless of the value of the input signal. The device is based on a modification of a digital to analog converter in a feedback loop which also includes a summing amplifier, receiving the input signal and a zeroing signal, and a comparator. The digital to analog converter produces the zeroing signal in response to the comparator output.

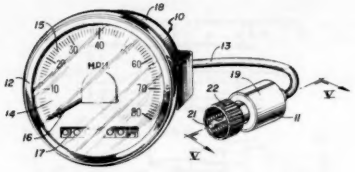
3,784,913
SPEEDOMETER

Edward Ralph Maass, Auburn, Mass., assignor to Curtis & Marble Machine Co., Worcester, Mass.

Continuation of Ser. No. 171,502, Aug. 13, 1971, abandoned. This application Apr. 2, 1973, Ser. No. 347,054

Int. Cl. G01p *3/48*

U.S. Cl. 324—173 **3 Claims**



A speedometer having a transmitter to emit electrical pulses and a receiver to receive the pulses, the meter and a motor being connected to the receiver to indicate speed and distance of travel.

3,784,914
MULTI-STEP PHASE SHIFT MODULATOR DEMODULATOR

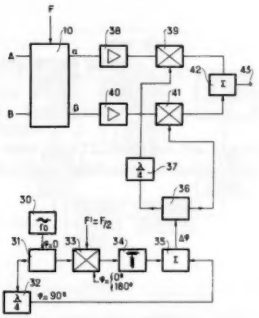
Claude Aillet, Lannion, France, assignor to Societe Lannionnaise D'Electroniques, Lannion, France

Filed Apr. 28, 1972, Ser. No. 248,729

Claims priority, application France, Apr. 30, 1971, 7115675; Mar. 15, 1972, 7209028

Int. Cl. H04l *27/18*; **G08c** *19/12*

U.S. Cl. 325—30 **18 Claims**



A multi-phase shift modulator-demodulator system employs a pair of pulse trains as the information source for phase modulating a carrier wave. The phase differences between selected bit positions of the pulse trains are employed to modulate the carrier wave through the use of typical ring modulators. In the demodulator phase comparison and delay circuitry is employed to extract the clock frequency for removing the information pulse trains.

ERRATUM

For Class 325—130 see:
Patent No. 3,784,799

3,784,915
APPARATUS FOR IMPROVING THE SIGNAL-TO-NOISE RATIO OF A RECEIVED SIGNAL

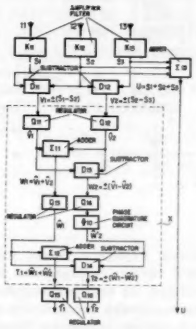
Jacques Oswald, Versailles, and Yves Rainsard, Antony, both of France, assignors to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France

Filed June 16, 1971, Ser. No. 153,620

Claims priority, application France, June 16, 1970, 7022111

Int. Cl. H04b *1/06*

U.S. Cl. 325—367 **4 Claims**



Device for improving the signal/noise ratio of a common signal received on three aerials utilizing correlation between the sum and difference values of combinations of the signals from the three aerials to eliminate or substantially suppress the noise received with the common signal.

3,784,916
COHERENT PHASE RECEIVER CIRCUIT

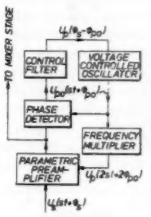
Robert Maurer, Neureut near Karlsruhe, Germany, assignor to LICENTIA Patent - Verwaltungs - GmbH, Frankfurt am Main, Germany

Filed July 21, 1971, Ser. No. 164,673

Claims priority, application Germany, July 23, 1970, P 20 36 475.4

Int. Cl. H03f *7/00*

U.S. Cl. 325—419 **1 Claim**

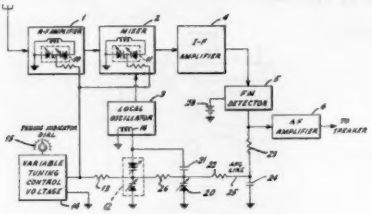


In a coherent phase receiver circuit consisting of a parametric preamplifier, phase detector, voltage-controlled reference oscillator, control filter and a frequency multiplier, the signal-to-noise ratio of the circuit is improved by constructing the preamplifier to be nonreciprocal, preferably in the form of a chain connection of an upconverter and a downconverter with neutralization of the feedback admittance, and by constructing the multiplier to act as a frequency doubler serving to produce the required pump frequency.

3,784,917
CONSTANT LOCK-IN RANGE AUTOMATIC FREQUENCY CONTROL

Roger Y. Kenyon, Hatfield, Pa., assignor to Philco-Ford Corporation, Blue Bell, Pa.

Filed Dec. 15, 1972, Ser. No. 315,493
Int. Cl. H04b 1/16
U.S. Cl. 325—422 7 Claims

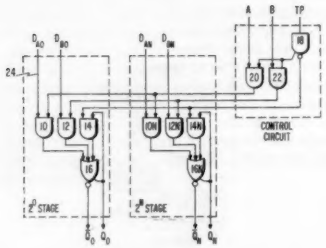


In a voltage variable capacitor tuned superheterodyne receiver, the manual tuning voltage and the automatic frequency control voltage are ordinarily applied to separate voltage variable capacitor diodes connected to the local oscillator tuned circuit. Constant automatic frequency control lock-in range over the tuning band is achieved by applying a small fraction of the automatic frequency control voltage to the manual tuning capacitor.

3,784,918
STORAGE CIRCUITS

Charles Joseph Fassbender, San Diego, Calif., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 20, 1972, Ser. No. 299,312
Int. Cl. H03k 17/04, 17/28, 19/20
U.S. Cl. 328—97 6 Claims

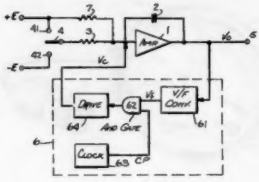


Each stage of a register includes first and second logical product gates, a logical sum gate receptive of the signals produced by the logical product gates and a feedback connection from the logical sum gate to the second logical product gate. A data signal is applied to the first logical product gate. In response to one binary value of a timing pulse, the first logical product gate is primed and the second disabled and in response to the other binary value of the timing pulse, the first logical product gate is disabled and the other primed.

3,784,919
DRIFT-COMPENSATED ANALOG HOLD CIRCUIT

Tadashi Azegami, Tokyo, Japan, assignor to Fisher & Porter Company, Warminster, Pa.

Filed Aug. 14, 1972, Ser. No. 280,672
Claims priority, application Japan, Aug. 31, 1971, 46/66328
Int. Cl. G06g 7/18; H03k 5/00
U.S. Cl. 328—127 1 Claim

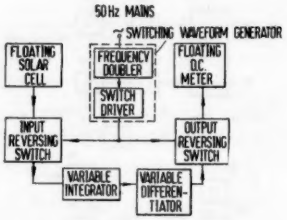


A drift-compensated analog hold circuit in which the output of the analog hold circuit is converted into a pulse train signal which is compared with reference clock pulses to detect the amount of drift in terms of a time-based signal. An analog drive circuit responsive to this time-based signal supplies a drift compensation signal to the analog hold circuit.

3,784,920
DIRECT CURRENT AMPLIFIERS

Phillip Harvey Jilbert, Tadley, England, assignor to National Research Development Corporation, London, England

Filed Oct. 3, 1972, Ser. No. 294,545
Claims priority, application Great Britain, Oct. 18, 1971, 48,379/71
Int. Cl. G06g 7/18, 7/12
U.S. Cl. 328—127 10 Claims



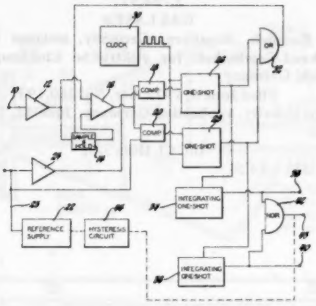
A direct current amplifier comprises a low impedance reversing switch having a pair of input terminals for connection to an input source and an integrating circuit connected to the output from said reversing switch. The integrating circuit comprises an amplifier having an integrating capacitor connected between its input and output. A differentiating circuit is connected to the output of the integrating circuit, said differentiating circuit comprising an amplifier having a capacitor in series with its input and a resistor connected between its input and output. Also provided are means for indicating the direct-current output of the differentiating circuit, said indicating means being connected to the output of the differentiating circuit via a second reversing switch; and a waveform generator connected to drive said two reversing switches in synchronism and providing a waveform which causes said switches to conduct synchronously in alternate directions, preferably for substantially equal periods.

3,784,921

CIRCUIT INDICATING CHANGE AND STEADY STATE OF A DC SIGNAL

Rene M. Iadipaolo, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 23, 1973, Ser. No. 344,071
Int. Cl. H03k 5/20, 5/153
U.S. Cl. 328—135 3 Claims



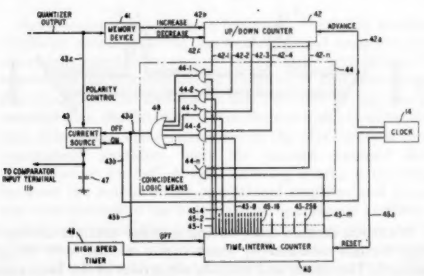
An input signal is applied to the subject circuit for determination of when the signal changes or reaches a steady state condition. Initially the input signal is stored in a sample and hold circuit and that stored value is compared with the input to determine when a preset difference has occurred. Then either of two one-shot multivibrators produces a short pulse depending on whether the difference is caused by positive or negative input change. The short pulse is used to reset the sample and hold circuit to the new value of the input signal and the same pulse is used to trigger either of two integrating one-shot multivibrators having long time constants providing long pulses indicative of positive or negative change. A gate responsive to the long pulses from both integrating multivibrators produces a steady state signal in the absence of both pulses.

3,784,922

ADAPTIVE DELTA MODULATION DECODER

Donald Edgar Blahut, Bloomfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 22, 1971, Ser. No. 155,582
Claims priority, application Sweden, Mar. 20, 1972, 236315/72
Int. Cl. H03k 13/22
U.S. Cl. 329—104 11 Claims



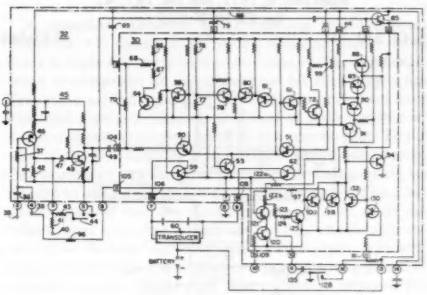
In an adaptive delta modulation system, step sizes are instantaneously companded by digital logic which controls the charging or discharging time interval of an integrating capacitor. A high speed timer divides each frame period into a plurality of equal time segments. A constant current source arranged to charge or discharge the capacitor is actuated simultaneously with the first timing pulse during each frame period. Current source ON time is determined by coincidence logic which associates with each possible step size a given number of time segments. Syllabic companding is simultaneously achieved by varying the magnitude of the current source output in accordance with the input signal envelope.

3,784,923

CONTROLLABLE AUDIO AMPLIFIER FOR MINIATURE RECEIVER PROVIDED BY A THICK FILM MODULE INCLUDING AN INTEGRATED CIRCUIT

John R. Rezek, Coral Springs, Fla., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 9, 1971, Ser. No. 151,461
Int. Cl. H03f 3/04
U.S. Cl. 330—22 14 Claims



Controllable audio amplifier for miniature radio receiver, such as paging receiver, provided as a hybrid module which includes a monolithic circuit chip on a circuit providing base. A pre-amplifier on the thick film applies signals to a differential power amplifier on the integrated circuit. The differential amplifier has two balanced sides, each having a plurality of stages and a direct current feedback loop with a voltage reference for providing bias stability for the class B output stages. A voltage regulator on the thick film is controlled by transistors on the integrated circuit to provide operating voltage to the amplifier only when the proper control signal is received. A control circuit turns on the regulator in response to various control signals, and includes a latching circuit for holding the amplifier on subject to reset by multiple means. This can be responsive to a voltage from a decoder or a receiver squelch circuit. Manual on and off operation is also provided.

3,784,924

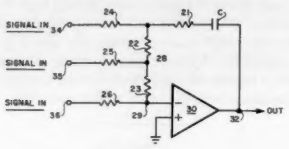
MULTI-INPUT LOOP FILTER WITH INDEPENDENT BANDWIDTH AND RESPONSE CHARACTERISTICS

Harlan H. Mansnerus, Newbury Park, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 31, 1972, Ser. No. 222,249
Int. Cl. H03f 3/68
U.S. Cl. 330—30 R 2 Claims

A single loop filter with multiple inputs and separate signal paths for each input using an operational amplifier with feedback capacitor connected in series with one or more damping

resistors and having an input resistor associated with each damping resistor; the multiple input resistors achieving more



than one bandwidth while the damping resistors maintain a desired damping factor for each input respectively.

3,784,925

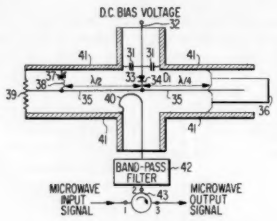
BROADBAND APPARATUS USING HIGH EFFICIENCY AVALANCHE DIODES OPERATIVE IN THE ANOMALOUS MODE

Kern Ko Nan Chang, Princeton; Hans John Prager, Belle Mead, both of N.J., and Sherman Weisbrod, Morrisville, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 8, 1971, Ser. No. 187,742

Int. Cl. H03f 3/10

U.S. Cl. 330—34 **8 Claims**



The frequency bandwidth of a microwave apparatus using an avalanche diode operating in the anomalous mode is increased by providing a frequency insensitive current path at frequencies harmonically related to the desired frequency bandwidth.

3,784,926

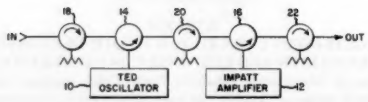
MICROWAVE POWER AMPLIFIER

James A. Hall, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed May 10, 1972, Ser. No. 251,913

Int. Cl. H03f 3/60

U.S. Cl. 330—53 **7 Claims**



A relatively high power, good quality microwave power amplifier is provided by a transferred-electron device (TED) oscillator and a negative resistance power amplifier having an IMPATT diode. The oscillator and amplifier are coupled together by circulators, and low power, frequency modulated input signals are injected into the oscillator to vary the oscillator frequency. Signals from the oscillator are applied to the amplifier and amplified. High quality signals at frequencies above 6–18 gigahertz and at power levels greater than 1 watt can be obtained with this amplifier.

3,784,927

GAS LASER

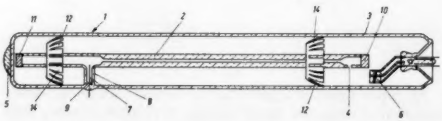
Joseph Rudolph, Augsburg, Germany, assignor to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH, Munich, Germany

Filed June 6, 1972, Ser. No. 260,193

Claims priority, application Germany, June 11, 1971, P 21 29 142.9

Int. Cl. H01s 3/02

U.S. Cl. 331—94.5 **8 Claims**



A discharge tube is located coaxially within an outer envelope and in pressure balance communication with the latter. Resonator mirrors are fastened to its respective ends. The discharge tube is elastically supported at several points relative to the outer envelope but rigidly supported at only one point, to permit differential thermal expansion of the tube within the envelope.

3,784,928

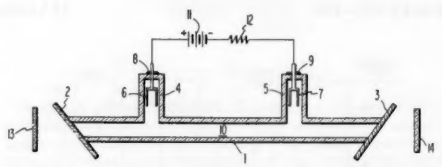
GAS DISCHARGE DEVICE AND ELECTRODE FOR USE THEREIN

Robert Anthony Crane, Lachine, Quebec, Canada, assignor to RCA Limited, Montreal, Quebec, Canada

Filed June 4, 1971, Ser. No. 149,915

Int. Cl. H01s 3/02, 3/22

U.S. Cl. 331—94.5 **11 Claims**

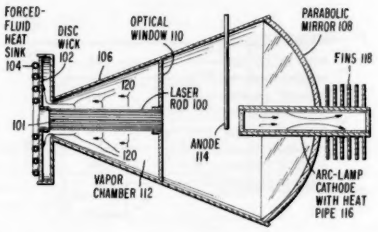


A carbon dioxide laser having a dense ceramic casing of high thermal conductivity which is non-reactive with the gas mixture. The anode and cathode electrodes of the laser comprise a rhodium-platinum alloy, which exhibits a low sputtering rate and which is also non-reactive with the gas mixture. The resulting device exhibits a lifetime of 8,000 hours or more under sealed conditions.

3,784,929
THERMALLY-CONTROLLED CRYSTALLINE LASERS

Patrick Francis Joy, Jr., Turnersville, and Donald George Herzog, Collingswood, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,298
Int. Cl. H01s 3/04
U.S. Cl. 331—94.5 7 Claims

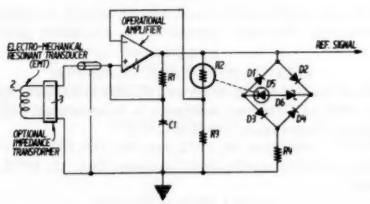


The use of a crystalline laser element itself as the evaporator of a heat-pipe is achieved by fluting a surface of the element with capillary grooves for the heat-pipe working fluid. This maintains the surface at a substantially uniform temperature.

3,784,930
AMPLITUDE STABILIZED OSCILLATOR

Robert E. Vosteen, 315 W. Center St., and Alan J. Werner, Jr., 304 W. Center St., both of Medina, N.Y.

Filed July 6, 1972, Ser. No. 269,454
Int. Cl. H03b 3/02
U.S. Cl. 331—183 12 Claims

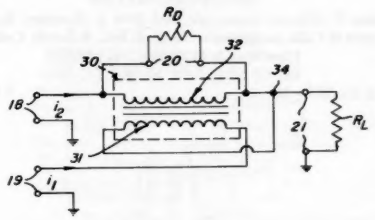


An electrometer apparatus having an amplitude stabilized oscillator circuit with an electromechanical resonant transducer connected to the input of the oscillator active stage. The transducer has first and second terminals. A differentially connected operational amplifier is also provided having plus and minus inputs, the first terminal of the electromechanical resonant transducer being connected to the plus terminal of the operational amplifier, and the second terminal being connected to ground. A light emitting source is connected between the output of the operational amplifier and ground, and is responsive to the output of the operational amplifier to supply a corresponding amount of energy to a light responsive element connected to the output of the operational amplifier. A negative feedback path connected between the light responsive element and the minus terminal of the operational amplifier is also provided. The electrometer may be used to measure unknowns such as the electrostatic potential of a surface in non-contacting manner or an electrostatic field.

3,784,931
FOUR PORT COMBINER UTILIZING SINGLE TRANSFORMER

Dennis H. Covill, Nova Scotia, Canada, assignor to Nautical Electronic Laboratories Limited, Hackett's Cove, Halifax County, Nova Scotia, Canada

Continuation-in-part of Ser. No. 194,985, Nov. 2, 1971, Pat. No. 3,747,026. This application May 23, 1973, Ser. No. 363,112
Int. Cl. H03h 7/48
U.S. Cl. 333—6 7 Claims

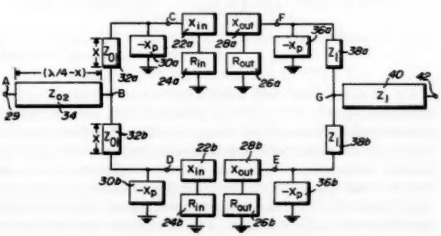


A combiner network for combining two synchronous, coherent AC signals each having differing power levels to form a single relatively high power output. The combiner network is comprised of an output port for supplying a load, a first and a second input port and a single transformer having a first and a second winding. One end of each winding is mutually connected to a terminal of the output port. The other end of the first winding is connected to one terminal of the first input port and the other end of the second winding is connected to one terminal of the second input port. The windings are connected and the windings have a turns ratio so that under rated operating conditions net flux attributable to current flow through the windings is substantially zero and the output currents from the first and second windings additively combine at the output port. The combiner network further comprises dissipative means connected across the windings, the dissipative means having an impedance selected to balance rated load impedance and responsive to non-zero net flux in the transformer to dissipate a portion of the energy supplied by the input ports so as to maintain an impedance balance between the input ports.

3,784,932
PARALLEL TRANSMISSION LINE MATCHING NETWORK FOR CONNECTING TOGETHER A PLURALITY OF R.F. AMPLIFIER TRANSISTORS

David S. Wisherd, Hoffman Estates, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 11, 1972, Ser. No. 313,899
Int. Cl. H01p 5/12; H03h 7/38
U.S. Cl. 333—9 11 Claims



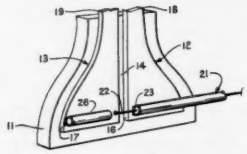
A transmission line matching network for connecting a plurality of RF amplifier transistors together in parallel in a

manner to assure substantially symmetrical division of power between the amplifier transistors includes a first plurality of similar transmission line matching networks each connected to one of the amplifier transistors to transform the impedance of each transistor to a predetermined level and a second transmission line matching network connected to each of the first matching networks for matching the impedances of the individual matching networks to that of another transmission line.

3,784,933
BROADBAND BALUN

James P. Scherer, Sunnyvale, and John A. Koerner, Belmont, both of Calif., assignors to Textron, Inc., Belmont, Calif.

Filed May 3, 1971, Ser. No. 139,570
Int. Cl. H01p *5/08*; **H03h** *7/38, 7/42*
U.S. Cl. 333—26 **5 Claims**

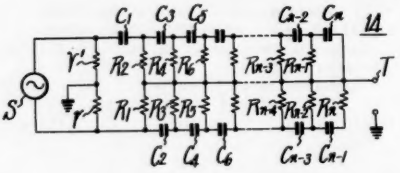


A balun comprised as electrical leads forming a slot line and having a tapered configuration to provide a matching impedance to an asymmetrical conducting system such as coaxial cable, strip-line, microstrip, etc. Broadband impedance matching is achieved between symmetrical and asymmetrical electrical transmission systems.

3,784,934
ALL-PASS PHASE-SHIFT CIRCUIT

Mitsuo Ohsawa, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 10, 1972, Ser. No. 305,530
Claims priority, application Japan, Nov. 19, 1971, 46/92800
Int. Cl. H03h *7/30*
U.S. Cl. 333—29 **8 Claims**

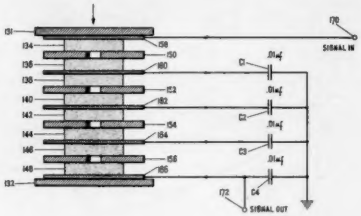


An all-pass phase-shift circuit having an input circuit for supplying signals with reversed phases at first and second terminals, and a phase-shifter bridge circuit with a first capacitor connected in series with a first resistor between the first and second terminals, a second resistor connected in series between the first capacitor and the first resistor, a series connection of a third resistor and a second capacitor connected in parallel with the first resistor, a third capacitor and means for connecting the third capacitor in parallel with the second resistor. A signal applied to the input circuit of the phase-shift circuit is linearly phase-shifted with respect to frequency.

3,784,935
TOUCH SENSITIVE POLYPHONIC MUSICAL INSTRUMENT

Alan R. Pearlman, Newton Highlands, and Dennis P. Colin, Beverly, both of Mass., assignors to ARP Instruments, Inc., Newton Highlands, Mass.

Filed June 15, 1972, Ser. No. 263,178
Int. Cl. H03h *7/10*
U.S. Cl. 333—70 CR **6 Claims**

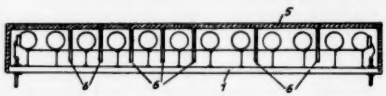


A touch sensitive device is associated with at least one key of an electronic musical instrument such as an electronic organ, inclues a layer of a pressure responsive, variable conductance material, and exhibits a switching action when subjected to pressure beyond a threshold pressure, any increase in pressure thereafter providing an increase in conductance up to a saturation pressure. The device may be used either as a combined switch and amplitude control or may be used in associated with one or more capacitors to provide either a high pass or low pass touch-control audio filter. In a totally polyphonic instrument a tone generator and touch-control filter are respectively associated with and responsive to each key depression, the output signal from each activated filter being coupled preferably to audio mixer circuitry.

3,784,936
ELECTROMECHANICAL FILTER

Dagobert Klein, Ludwigsburg, and Gunter Schneider, Renningen, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,250
Claims priority, application Germany, Dec. 22, 1972, P 22 02 948.7
Int. Cl. H03h *9/10, 9/26*
U.S. Cl. 333—71 **5 Claims**



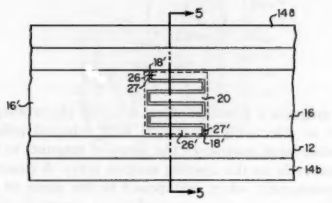
In this electromechanical filter arrangement having a plurality of resonators vibrating in the first flexural mode, with each coupled to the adjacent resonators at the antinodal line, acoustic coupling between resonators not adjacent to one another is prevented by means of partitions or walls between each resonator or between a group of resonators and the adjacent group. The partitions are mounted on the inside of the filter cover or on the filter base plate.

3,784,937

BLOCKING CAPACITOR FOR A THIN-FILM RF TRANSMISSION LINE

Weldon H. Jackson, Sunnyvale, and John C. Lamy, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 25, 1972, Ser. No. 300,634
Int. Cl. H01p 5/02, 3/08
U.S. Cl. 333—84 M 2 Claims



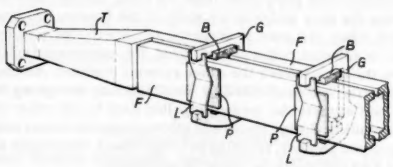
A blocking capacitor is formed in the center conductor of a thin-film RF transmission line which is situated over a metal conductor and insulated from the center conductor and outer conductors of the transmission line. The distributed capacitor so formed couples RF signals over a broad frequency range while blocking DC and very low frequency signals on the transmission line.

3,784,938

MICROWAVE SPECTROSCOPY

John Cuthbert, Bottisham, and James Albert Stow, Ely, both of England, assignors to Cambridge Scientific Instruments Limited, Cambridge, England

Filed Jan. 7, 1972, Ser. No. 216,207
Claims priority, application Great Britain, Jan. 12, 1971, 1,343/71
Int. Cl. H01p 3/12
U.S. Cl. 333—95 9 Claims



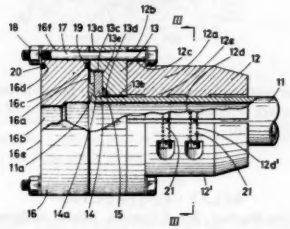
In a Lide type of absorption cell for use in Stark modulation microwave spectroscopy the cell is in two mutually insulated halves which are secured together by longitudinally spaced releasable clamps allowing the cell to be taken apart readily for cleaning but holding the halves accurately in their correct relative positions when assembled. The clamps can be of C-shape with disengageable leaf springs fitting in their open sides.

3,784,939

APPARATUS FOR CONNECTING WAVEGUIDE AND METHOD THEREFOR

Tsutomu Maeda, Itami, and Yoshikazu Sato, Amagasaki, both of Japan, assignors to Dainichi-Nippon Cables, Ltd., Amagasaki-shi, Hyogo-ken, Japan

Filed July 8, 1971, Ser. No. 160,728
Claims priority, application Japan, July 10, 1970, 45/69418
Int. Cl. H01p 1/04
U.S. Cl. 333—98 R 11 Claims



A waveguide flared at its end is connected to a waveguiding connector means by so positioning a pressure member loosely encompassing the waveguide as to press the flared end of the waveguide against the connector means with the pressure edge of the pressure member so that both waveguiding paths of the waveguide and the connector means are precisely aligned, fixing a pair of half shells onto the surface of the waveguide thereby sandwiching the pressure member between the flared end and paired half shells, and securing the connector means, pressure member and paired half shells together by means of bolts and nuts.

In assembling such connecting apparatus, a jig having structure for adaptability to the bolt apertures and the waveguiding path of the connector means is prepared in advance. The pressure member is so placed as to encompass the waveguide by using the jig so that the bolt apertures of the pressure member are precisely but tentatively positioned with respect to the waveguiding path of the waveguide and then the paired half shells are fixed to the waveguide with the pressure member keeping the said position by being sandwiched between the flared end of the waveguide and the half shells. Then the jig is removed and instead, the connector means is secured to the pressure member as well as half shells by means of the bolts and nuts with the result that the bolt apertures of the connector means are precisely positioned with respect to those of the pressure member. As a result the waveguiding paths of these are precisely aligned.

3,784,940

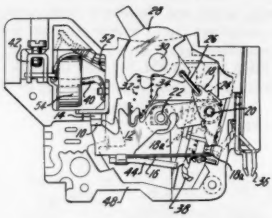
CIRCUIT BREAKER WITH OVERCURRENT AND AUXILIARY RELEASES

John De Torre, Albemsrle, N.C., assignor to Federal Pacific Electric Company, Newark, N.J.

Filed Sept. 15, 1972, Ser. No. 289,763
Int. Cl. H01h 73/48
U.S. Cl. 335—18 6 Claims

An automatic circuit breaker here includes a mechanism for manual opening and closing of the contacts, and an overcurrent release. Auxiliary release means is also included for opening of the contacts, as in response to a detected ground fault. The overcurrent release includes a latch that is caused to deflect laterally in response to an overcurrent, and the mechanism includes a shiftable latch part having a lateral surface that engages an abutment part of the overcurrent latch. Deflection of the latch, or retraction of the latch part effects release of the circuit breaker. An electromagnet has an arma-

ture for operating the shiftable latch part. The armature is located close to the shiftable latch part in the closed configu-



ration of the mechanism, but there is no possible interference by the armature with any of the operating paths of the circuit breaker mechanism.

3,784,941

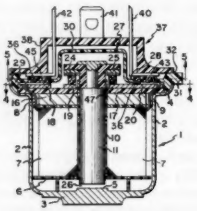
RELAY CONSTRUCTION

Gideon A. Du Rocher, Mt. Clemens, Mich., assignor to Essex International Inc., Fort Wayne, Ind.

Filed Mar. 6, 1972, Ser. No. 232,145

Int. Cl. H01h *1/02*

U.S. Cl. 335—196 **18 Claims**



A relay construction having an energizable and deenergizable electrical winding operable to effect movements of an armature to and from a switch-closing position and wherein a non-conductive, elastomeric pad is interposed between the switch contacts, the elastomeric pad containing discrete, normally separated, electrically conductive particles dispersed therein in such quantity as to render the pad electrically conductive in response to compression thereof. The pad is mounted in such position as to be compressed in response to movement of the armature toward its switch-closing position. The elastomeric pad may be impregnated with or immersed in a lubricant and may form part of an electrically non-conductive, oil impervious seal or gasket for effect an environmental seal for the operating parts of the relay.

3,784,942

TERNARY ESCORT MEMORY SYSTEM

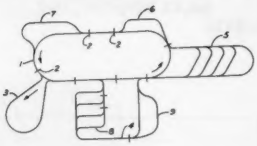
Glenn J. Eggert, Milwaukee, Wis., assignor to Rex Chainbelt Inc., Milwaukee, Wis.

Filed Nov. 17, 1972, Ser. No. 307,600

Int. Cl. H01h *27/00, 36/00*

U.S. Cl. 335—206 **8 Claims**

In an addressing system of a transportation facility an array of magnetically operated sensors, reed switches, Hall devices, etc. are arranged to operate on a ternary system, as contrasted to a binary system, by providing each sensor with a selectively magnetized bias magnet, either a permanent magnet or an electromagnet, so that each sensor is responsive to the polarity as well as field strength of a corresponding permanent or electromagnetic operate magnet of an array of operate magnets movable into juxtaposition to the array of sensors. The sensors are connected either all in series to complete a controlled circuit or all in parallel to open a controlled circuit and each sensor is arranged to respond to magnetic fields of a bias and an operate magnet and is therefore in a first state unless both magnets are demagnetized or have polarities that neutralize each other in the region of the sensor. When remanent magnets, i.e. magnets having high retentivity, are employed as



operate magnets a corresponding array of electromagnets is provided to selectively magnetize with selected polarity or demagnetize each magnet of the array of magnets to impress an address code on the operate magnet array. A similar array of electromagnets, when juxtaposed to the array of sensors selectively magnetizes the array of bias magnets to condition the array to respond to a particular address code.

3,784,943

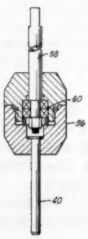
SOLENOID ACTUATOR

Ivan N. Markowitz, Oklahoma City, and Darby A. Gray, Norman, both of Okla., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed July 19, 1972, Ser. No. 273,092

Int. Cl. H01f *7/08*

U.S. Cl. 335—266 **2 Claims**



A solenoid actuator having a core which can be attracted to either of two extreme positions in a housing by separately energized, longitudinally spaced coils and at least one relatively rotatable shaft protruding from the core. Springs mounted between the core and interior walls of the housing are compressed when the core is attracted to an extreme position. When an adjacent coil is de-energized, the compressed spring pushes the core toward the other extreme position. An electromagnetic field established by simultaneously energizing the other coil attracts the spring-propelled core to the other extreme position. Spring forces and electromagnetic forces complement one another, resulting in a high speed, long throw actuator with low electrical power requirements.

3,784,944

ADJUSTABLE ELECTRIC BUZZER

Spencer C. Schantz, New Berlin, and William R. Berry, Menomonee Falls, both of Wis., assignors to Spencer C. Schantz, New Berlin, Wis.

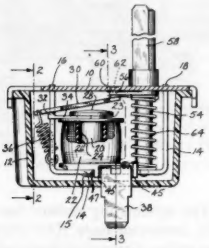
Filed June 21, 1972, Ser. No. 264,899

Int. Cl. H01f *7/14*

U.S. Cl. 335—276 **9 Claims**

A ferromagnetic pole piece with a coil therearound is attached at one end to a ferromagnetic frame and a ferromag-

netic armature is pivoted to the frame for vibratory movement toward and away from the other end of the pole piece to form a buzzer. The pivotal attachment of the armature includes non-magnetic pivot bearings which are so positioned as to direct the flow of magnetic flux between the frame and armature into a path which enters the armature transversely and thus eliminates undesirable vibration of the armature at the



pivot bearings when the armature is pivoted on a conical end face of the pole piece in the "off" position. The intensity of the buzzing sound is controlled by a variable abutment member which varies the maximum air gap between the free end of the armature and the pole piece, which abutment member includes a rotatable shaft with a cam member positioned to vary the limit of movement of the armature away from the pole piece.

3,784,945

PERMANENT MAGNET FOR SUSPENSION BEARINGS

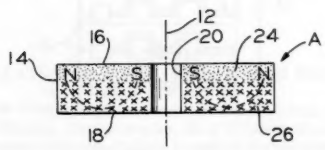
Max Baermann, 506 Bensberg, Bezerk Cologne, Germany

Filed Feb. 7, 1973, Ser. No. 330,247

Claims priority, application Germany, June 28, 1972, P 22 31 591.9

Int. Cl. H01f 7/02

U.S. Cl. 335—302 **14 Claims**



A permanent magnet is formed from a mixture of powdered permanent magnet material and a synthetic resin binder. The magnet includes first and second layers. One layer has a coercivity substantially greater than the second layer.

3,784,946

SMOOTHING CHOKE

Roald Bingen, Marcinelle, and Jacques Van Hulse, De Pinte, both of Belgium, assignors to ACEC Cateliers DE Constructions Electriques de Charierol, Charleroi, Belgium

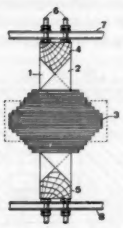
Filed Feb. 26, 1973, Ser. No. 335,930

Claims priority, application Belgium, Feb. 25, 1972, P 3822; Mar. 7, 1972, P 3823

Int. Cl. H01f 27/02

U.S. Cl. 336—59 **10 Claims**

This invention concerns a smoothing choke of a highly reduced weight. The smoothing choke consists of a magnetic core made up of a stock of trapezoidal metal sheets having the two parallel sides thereof alternately reversed so as to obtain a core of general parallepipedal shape having, at each end thereof, a groove in the shape of a triangular prism. A coil is wound around the core and has outer turns the perimeter of



which is successively reduced by step-like winding, from the turns around the central part of the core, symmetrically, to the turns around the ends of the latter.

3,784,947

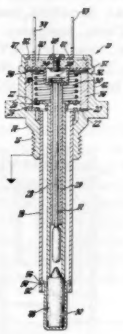
TEMPERATURE RESPONSIVE SWITCH

Donald J. Zelenka, Flushing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 4, 1972, Ser. No. 311,933

Int. Cl. H01h 37/40

U.S. Cl. 337—320 **2 Claims**



This invention relates to a temperature switch and more particularly to a temperature responsive switch used in a catalytic converter generally found in internal combustion engine exhaust systems. The temperature switch is an independent self-contained unit that is mounted directly on the converter and has a sensing element that extends into the converter to activate switch contacts to provide an initial signal, as well as a second signal that the catalyst within the converter may become ineffective due to deterioration of the catalyst and therefore maintenance of the converter is required. The signal could also be used to activate bypass means in or adjacent to the converter.

3,784,948

INTEGRATED CIRCUIT PACKAGE OF UNIFIED STRUCTURE WITH VARIABLE RESISTOR

Samuel A. Johnston, Fontana; John G. Lyons, Janesville, and Henry J. Riedmayer, Fort Atkinson, all of Wis., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

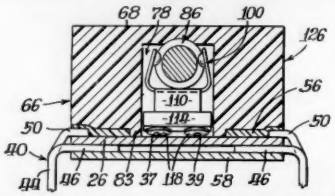
Continuation of Ser. No. 58,372, July 27, 1970, abandoned. This application Dec. 23, 1971, Ser. No. 211,655

Int. Cl. H01c 9/02

U.S. Cl. 338—183 **11 Claims**

An integrated circuit-type component including a ceramic substrate having conductive and resistive paths, including

both variable and fixed resistances; a pair of terminal strips each having a plurality of terminal elements, secured to the substrate on opposite sides thereof by clinching and soldering in electrical engagement with respective ones of the paths and forming a unitary, rigid and mechanically strong assembly; the terminal strips forming in-line pin elements; flat bonding elements on opposite surfaces of the substrate enclosing the clinching elements; a case having a hollow interior; and a lead screw and carrier in the case, the lead screw being exposed to the exterior for adjusting manipulations, the carrier being moved by the lead screw and having a contact member engaging the variable resistance paths, to form a potentiometer.



3,784,949

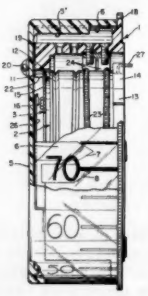
SET-POINT ASSEMBLY WITH SPIRAL RESISTOR TO REDUCE RESISTOR WEAR

Matthew A. Jankowski, Stratford, and Simeon J. Donahue, Cheshire, both of Conn., assignors to American Chain & Cable Company, Inc., New York, N.Y.

Filed May 28, 1971, Ser. No. 148,112

Int. Cl. H01c *5/02*

U.S. Cl. 338—196 **20 Claims**



A set-point assembly for use in monitoring a process variable and generating an input reference signal to a controller unit used for controlling the process variable. The set-point assembly includes a housing drum with a scale, a set-point device rotatably mounted within the drum and having a set pointer for cooperating with the scale, a meter movement unit disposed within the drum and having an indicating pointer cooperating with the scale, and a slide wire mechanism for generating a signal corresponding to the position of the set pointer along the scale.

3,784,950

COAXIAL CONNECTOR WITH INTEGRAL SWITCHED TERMINATING RESISTOR

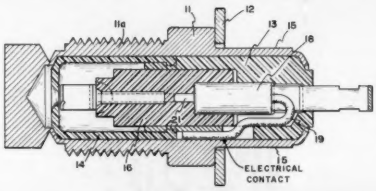
Rudleigh G. Coffman, 769 Bay Tree Ln., El Cerrito, Calif.

Filed Oct. 26, 1972, Ser. No. 301,237

Int. Cl. H01c *13/00*

U.S. Cl. 338—220 **6 Claims**

A coaxial connector which is especially suitable for use in CATV systems in which the connector contains an integral terminating resistor. The connector includes a hollow body surrounding an insulator assembly within which is disposed a spring contact assembly. The spring contact assembly includes two spring contact fingers normally biased to a first position, but which are adapted to be displaced to a second position upon the insertion of a coaxial cable center conductor therebetween. The terminating resistor has one of its leads connected to the connector body. The other lead of the terminating resistor makes direct electrical and mechanical contact to one of the spring contact fingers when the fingers are in the first position but the terminating resistor is mechanically and electrically disconnected therefrom when the spring contact fingers are displaced to the second position.



3,784,951

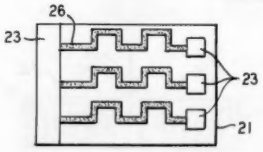
THIN FILM RESISTORS

Charles A. Steidel, Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 731,183, May 22, 1968, Pat. No. 3,627,577. This application Dec. 16, 1970, Ser. No. 98,723

Int. Cl. H01c *7/00*

U.S. Cl. 338—262 **1 Claim**



Thin film resistors may be obtained by depositing tantalum-aluminum films containing from 25–60 atom per cent aluminum upon an insulating substrate member by conventional condensation techniques and on anodizing the deposited film.

3,784,952

HIGH VOLTAGE ANODE CUP

Myles N. Murray, Chagrin Falls, Ohio, assignor to Industrial Electronic Rubber Company, Twinsburg, Ohio

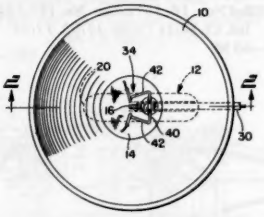
Filed Apr. 20, 1972, Ser. No. 245,816

Int. Cl. H01r *11/30*

U.S. Cl. 339—12 V **7 Claims**

A suction type of high voltage lead connection comprising a molded elastomeric body having a bottom receptor portion of appreciable length with rounded exterior corners at its ends. There is a T-shape slot in the bottom of the cup which intersects an axial passage in the receptor part, with a power lead interiorly connected to a spring clip which extends upwardly through the slot to make the energy available for connection

within the interior of the cup. The slot is filled with insulating material, such as silicone gel, and the exit end of the power



lead passage is formed of a relatively reduced diameter which acts as a wiper to contain the sealant and provide a watertight joint for the lead.

3,784,953

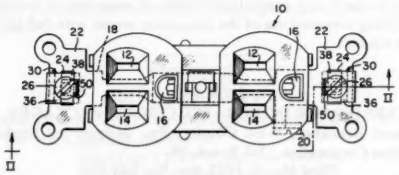
GROUNDING CONNECTION FOR ELECTRICAL UNIT

Bhartoor Lingaraju, Allentown, Pa., assignor to Rodale Manufacturing Co., Inc., Emmaus, Pa.

Filed Apr. 28, 1972, Ser. No. 248,448

Int. Cl. H01r *3/06*

U.S. Cl. 339—14 R **5 Claims**



Clips are carried by an electrical unit in such manner that when the unit is mounted in a flush box a reliable electrical circuit connection between the unit and the flush box is assured.

3,784,954

APPARATUS FOR PLUG CONNECTION OF PRINTED CIRCUIT BOARDS

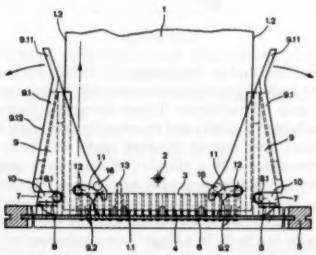
Hans-Ueli Grimm, Ebikon; Daniel Zufferey, Luzern, and Antonio Messina, Emmenbrucke, all of Switzerland, assignors to Inventio Aktiengesellschaft, Hergiswil, Switzerland

No Drawing. Filed Apr. 28, 1972, Ser. No. 248,395

Claims priority, application Switzerland, May 6, 1971, 6734/71

Int. Cl. H01r *13/54*

U.S. Cl. 339—17 LM **10 Claims**



An apparatus for establishing a plug connection at printed circuit boards wherein the circuit boards can be plug connected with a contact element secured to a support, the circuit boards sliding in guides secured to the support at their edges which are in parallelism with the direction of insertion of the circuit boards. According to the invention a respective double-arm lever having an actuation arm and an engagement arm is rotatably mounted in mirror-image fashion at the narrow sides of the fixed contact element. The engagement arm possesses a slot at its end removed from the axis of rotation for receiving a bolt secured to the circuit board and by means of the actuation arm the circuit board through the agency of the engagement arm and the bolt can be selectively inserted into and removed from the fixed contact element.

3,784,955

CONNECTING DEVICE FOR PRINTED CIRCUIT BOARD

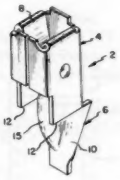
Charles Edward Reynolds, Camp Hill, and Eugene Leonard Gombar, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 111,402, Feb. 1, 1971, Pat. No. 3,718,895.

This application Feb. 23, 1973, Ser. No. 335,203

Int. Cl. H01r *5/04, 9/12;* **H05k** *1/02*

U.S. Cl. 339—17 R **5 Claims**



Printed circuit board has connecting device mounted thereon and soldered to a conductor on the board. The connecting device has a mounting portion which extends into a hole in the PC board and a receptacle portion which extends above the surface in the board. The receptacle portion is offset from the hole in the PC board and the mounting portion is hemi-ellipsoidal and faces away from the receptacle portion. Solidified solder is in the hole and bonded to an external side of the receptacle portion but is not flowed into the receptacle portion.

3,784,956

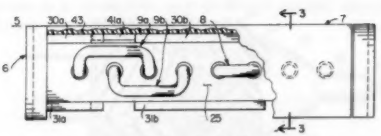
PROGRAMMABLE ELECTRICAL CONNECTOR

Gerald R. Gassman, Sunnyvale, Calif., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed June 5, 1972, Ser. No. 259,617

Int. Cl. H01r *9/00*

U.S. Cl. 339—18 R **11 Claims**



This solderless connector comprises a rigid dielectric base having a plurality of holes therethrough with longitudinal axes that are parallel and in a common plane; a resilient channel-shaped dielectric cover; a straight strapping pin that is U-shaped; and a crossover strapping pin with parallel legs and a U-shaped head having a crossbar that is offset from adjacent ends of the legs of the second pin. A particular connector is assembled by inserting the legs of a first strapping pin into selected holes in the base through which electrical connection is desired. Connection through selected holes on either side of

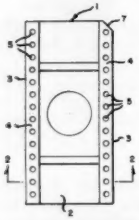
one leg of the first pin, without making electrical connection thereto, is provided by inserting legs of a crossover pin into the selected holes with the offset crossbar bypassing the one leg. The base and cover have complementary locking surfaces for holding the assembled connector together. In a connector for making more complex interconnections, the dielectric base and cover comprise complementary body halves that are hinged together. A plurality of complementary grooves having longitudinal axes parallel to each other and in a common plane are formed in one surface of each body half for receiving the legs of strapping pins. A pair of complementary troughs with longitudinal axes perpendicular to the axes of the grooves are formed in the one surface of each body half for receiving the offset crossbars of strapping pins. Mating locking surfaces are formed on both body halves for holding an assembled connector together.

3,784,957

CONDUCTIVE SHUNT FOR DUAL-IN-LINE TERMINAL INTEGRATED CIRCUIT

Richard J. Bailey, Tonawanda, N.Y., assignor to GTI Corporation, Tonawanda, N.Y.

Filed June 29, 1972, Ser. No. 267,400
Int. Cl. H01r *31/08*
U.S. Cl. 339—19 **3 Claims**



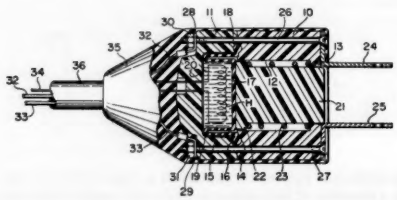
A shunt for dual-in-line terminal integrated circuits has a channel-shaped body of a conductive elastomer, the upstanding flanges of the channel being provided with a plurality of holes extending therethrough perpendicular to the web.

3,784,958

SELF-EJECTING ELECTRIC PLUG

Lee M. Harris, Dayton, Ohio, assignor to Gould Inc., Chicago, Ill.

Division of Ser. No. 754,188, Aug. 21, 1968, Pat. No. 3,609,635. This application Apr. 5, 1971, Ser. No. 131,511
Int. Cl. H01r *13/62*
U.S. Cl. 339—45 R **9 Claims**



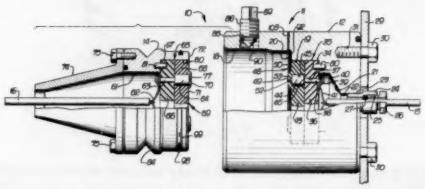
The plug includes a plunger normally spring retracted between the prongs and a chamber containing thermally expansible material and an electric heater which is the plug cord circuit, a remote switch closure energizing the heater to expand the material against the plunger to drive it outwardly and eject the plug from the receptacle.

3,784,959

SELF-HEALING ELECTRICAL CONNECTOR MEANS

Edward E. Horton, Portuguese Bend, Calif., assignor to Deep Oil Technology, Inc., Long Beach, Calif.

Filed Nov. 10, 1971, Ser. No. 197,324
Int. Cl. H01r *11/20, 11/02, 13/54*
U.S. Cl. 339—60 M **8 Claims**



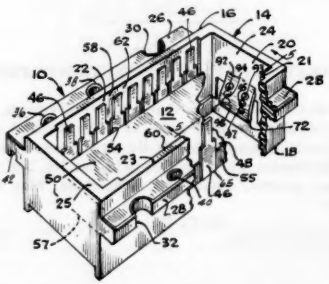
An electrical connector means for use in an adverse hostile fluid environment such as a subsea installation, and comprising electrical contact members embedded in and normally covered by a dielectric material having a relatively soft deformable resilient surface means having raised portions which under pressure engagement are adapted to be penetrated by one of the contact members which includes a hard contact point while the other contact member includes a relatively soft contact portion to make full electrical contact under pressure. Shims between housing portions are also provided to limit and control the depth of penetration thereby permitting repeated use of the connector means with full electrical contact.

3,784,960

CARRIER FOR INTEGRATED CIRCUIT PACKAGES

Richard Bruckner, West Chester, Pa., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed May 1, 1972, Ser. No. 248,980
Int. Cl. H01r *13/54*
U.S. Cl. 339—91 R **5 Claims**



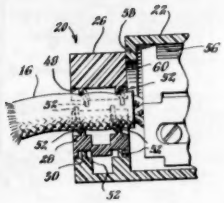
A carrier for dual-in-line integrated circuit package having a rigid flat body is provided with retention means including an opposite pair of cantilever fingers integrally formed in opposite walls of the carrier and rearwardly extending therefrom in elongated form and at an acute angle with body-engaging surfaces provided with a plurality of rearwardly spaced-apart detents to accommodate bodies of differing thicknesses. The cantilever fingers are adapted to be deflected toward the walls by insertion of the body with at least one of the detents engaging a side of the body in a finger-force releasing relationship. The carrier also is provided with guide shoulders and rearwardly positioned support shoulders for predetermined positioning of the packages.

3,784,961

CABLE CLAMP

Albert J. Gartland, Jr., Trumbull, Conn., assignor to Harvey Hubbel Incorporated, Bridgeport, Conn.

Filed Apr. 24, 1972, Ser. No. 246,933
Int. Cl. H01r 13/58
U.S. Cl. 339—107 9 Claims



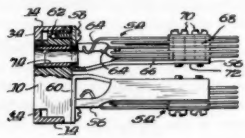
An apparatus for clamping electrical cables, particularly where cables of widely varying diameter are clamped. Cables of relatively greater diameter are accommodated by utilizing clamping jaws with criss-cross gripping ribs to reduce elliptical distortion through a multi-mode distribution of the clamping forces. Cables of relatively lesser diameter are accommodated by extending the gripping ribs to overlap the interface between the clamping jaws and enfold the cable within a conduit. The overlapping and crisscrossed ribs also provide for a more even distribution of the clamping forces to prevent cable ruptures.

3,784,962

MODULAR JACK PANEL

Lucid L. Byrd, Mt. Prospect, Ill., assignor to Carter Precision Electric Company, Skokie, Ill.

Filed Oct. 12, 1971, Ser. No. 188,079
Int. Cl. H01r 13/60
U.S. Cl. 339—121 13 Claims



Electrical connectors or jacks are fastened to the rear face of synthetic resin modules in alignment with access openings therethrough for jack plugs, the modules being grouped in juxtaposed relation and removably secured within a supporting channel frame for mounting between the uprights of a rack, cabinet or other structure.

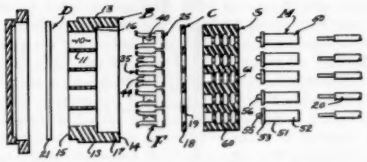
3,784,963

CONNECTOR ASSEMBLY FOR TERMINAL JUNCTION SYSTEM

Herbert A. DeCenzo, 17901 Yorba Linda Blvd., Apt. 20, Yorba Linda, Calif.

Filed Aug. 20, 1971, Ser. No. 173,422
Int. Cl. H01r 9/00
U.S. Cl. 339—198 P 25 Claims

Terminal block assemblies for establishing selective continuity through a multiplicity of electrical conductors, wherein female contact and retension units are included in a predetermined circuitry that receive and anchor male contacts at the terminal ends of said conductors. The completed assemblies are qualified as high reliability electrical equipment and are both vibration and moisture proof; while the total volumetric displacement of the assemblies is in each instance considerably less than comparable assemblies heretofore employed. It is a terminal junction system comprised of cooperative components which are assembled as circumstances require in order to establish selectively predetermined electrical continuity through one or more circuits.

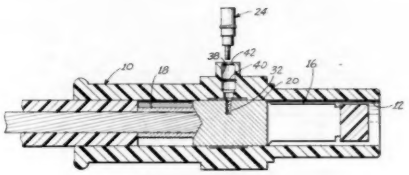


3,784,964

ELECTRICAL CONNECTOR WITH RETAINER MEANS

Albert P. Newman, and Clem Edward Haun, both of Cincinnati, Ohio, assignors to Empire Products, Inc., Cincinnati, Ohio

Filed Mar. 27, 1972, Ser. No. 238,174
Int. Cl. H01r 9/16
U.S. Cl. 339—219 R 11 Claims



An electrical connector for terminating an electric cable, and an insulating sleeve therefor, said sleeve containing a central bore for receiving a male or female connector therein, and means securing said male or female connector against axial movement and rotation within said bore, said means comprising an insulated elongated member having major and minor body portions, wherein said minor portion engages said male or female connector and said major portion engages said sleeve in a manner to provide a seal against intrusion by moisture for said engaged connector.

3,784,965

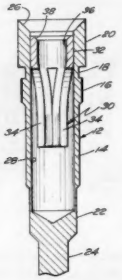
TERMINAL CONSTRUCTION

James V. Murphy, Warwick, R.I., assignor to Electronic Molding Corporation, Woonsocket, R.I.

Filed Mar. 13, 1972, Ser. No. 234,260
Int. Cl. H01r 13/12
U.S. Cl. 339—258 R 1 Claim

A terminal for insertion into an integrated circuit panel board including an upper barrel portion in which a bore is formed, the outermost end of the upper barrel portion being countersunk to define a tapered entry for the bore; an inner member defining an interior contact member being located

within the bore adjacent to the tapered entry of the outer member, wherein the tapered entry forms an enlarged opening for leading a male element into the inner contact member for electrical engagement therein.



3,784,966

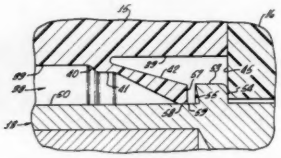
CONTACT FOR ELECTRICAL CONNECTOR

Kenneth M. Clark, Beaumont, Calif., assignor to The Deutsch Company Electronic Components Division, Banning, Calif.

Division of Ser. No. 167,317, July 29, 1971, Pat. No. 3,727,172, which is a continuation-in-part of Ser. No. 83,782, Oct. 26, 1970, abandoned. This application Apr. 4, 1973, Ser. No. 347,803

Int. Cl. H01r *11/08*

U.S. Cl. 339—276 T **4 Claims**



An electrical connector that includes an insert having continuous openings between the forward and rearward ends, each of the openings receiving a contact which is retained between a rearwardly facing shoulder in each opening and integral resilient fingers on the insert, which incline forwardly and inwardly from the circumferential wall of the opening to engage the rear contact shoulder, which is undercut to stabilize the ends of the fingers and improve contact retention.

3,784,967

SEISMIC RECORD PROCESSING METHOD

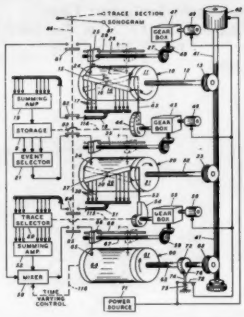
John Michael Graul, Houston, Tex., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 797,844, Feb. 10, 1969, abandoned. This application July 2, 1971, Ser. No. 163,526

Int. Cl. G01v *1/32*

U.S. Cl. 340—15.5 TC **11 Claims**

A seismic record processing method is described wherein groups of traces comprising the original record are sonogrammed and events selected to identify, within each group of sonogram traces, coherent energy at specified record moveouts wherein the aforementioned coherencies are advantageously enhanced; after the picked sonogram traces are again sonogrammed to produce traces of a simulated record, the simulated traces are combined ("mixed"), with corresponding traces of the original record whereby both trace-to-trace coherency and across-the-section continuity of the resulting final display, are surprisingly improved.



3,784,968

NAVIGATION SYSTEM

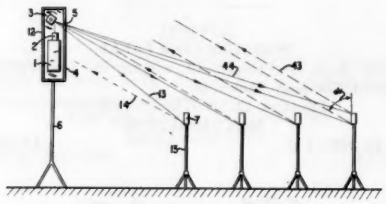
Jorgen Brosow, Hackspettragen 13, Bromma, Sweden

Filed May 27, 1971, Ser. No. 147,410

Claims priority, application Sweden, May 29, 1970, 7415/70

Int. Cl. G08g *5/00*

U.S. Cl. 340—25 **2 Claims**



A navigation system for determining on board a moving craft the position of the moving craft in relation to a fixed station which is provided with visual means for guiding said moving craft wherein there are means on said station for visible said visual means to the navigator of said moving craft by means of laser beams.

3,784,969

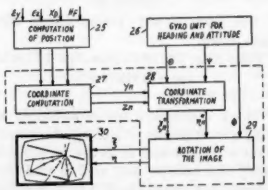
AIRCRAFT LANDING DISPLAY APPARATUS

Volkmar Wilckens, 2 Nebeler Str., Unterpfaffenhofer 8034, and Wolfram Schattenmann, No. 62 Memekrstrasse, Munich, both of Germany

Continuation-in-part of Ser. No. 772,511, Nov. 1, 1968, abandoned. This application Dec. 29, 1971, Ser. No. 213,593

Int. Cl. G08g *5/02*

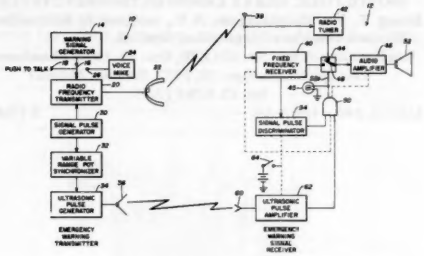
U.S. Cl. 340—27 NA **17 Claims**



Display apparatus for use on aircraft is designed to present all the required guidance information in pictorial form for use

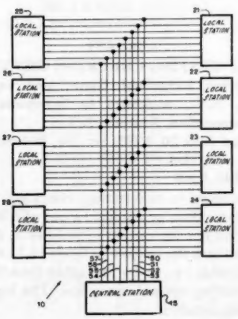
by a pilot permitting him to land an aircraft on the basis of the pictorially presented information even under the worst visual conditions.

3,784,970
EMERGENCY WARNING SYSTEM WITH RANGE CONTROL
William E. Simpkin, 4435 Fairfax, Dallas, Tex.
Filed Feb. 17, 1971, Ser. No. 116,007
Int. Cl. G08g *1/01*
U.S. Cl. 340—33 **7 Claims**



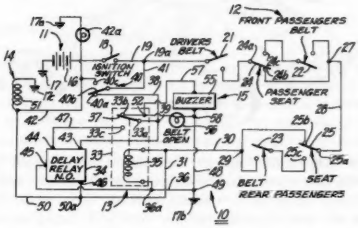
A range controlled emergency vehicle warning system wherein a directional radio frequency transmission has pulses superimposed thereon at a predetermined rate are concomitantly transmitted with ultrasonic pulses at the same rate. At a receiving station in a vehicle or a traffic signal controller the radio frequency signals and the ultrasonic pulse signals are received. A gate at the receiving station responsive either to the simultaneous reception, or a preselected time phasing, of the radio frequency carried pulses and an ultrasonic pulse signal generates an enable signal to cause any radio frequency carried warning advisory signal to produce a intelligible alarm such as a visual display and/or an audible alarm in the vehicle and/or to control traffic signals during approach to a given intersection. The difference in propagation velocities of the radio frequency and ultrasonic pulses fixes a time length window to limit the range of the warning zone.

3,784,971
DIGITAL SYSTEM FOR CONTROLLING TRAFFIC SIGNALS
John J. May, 1398 Flicker Way, Sunnyvale, Calif.
Filed Feb. 16, 1972, Ser. No. 226,919
Int. Cl. G08g *1/07*
U.S. Cl. 340—40 **2 Claims**



System for controlling traffic signals in which a local controller is located at each controlled intersection, respectively, to control the operation of a traffic signal at its associated intersection. A central controller is connected to the local controllers for the transmission of signals thereto. The central controller is programmed to provide output data which activate the local controllers. The data includes two digital words. One digital word selects the local controller to be activated and the other digital word selects the phase to which the selected local controller is to be advanced. The selected local controllers are operated by the central controller for controlling the traffic lights at their associated intersections. Each local controller includes a set of timers for controlling intervals that are program invariants. The local controllers will continue to operate in a fixed time mode in the absence of an overriding signal for the local controllers. When a local controller is activated by the central controller to advance to a designated light phase, the local controller will advance to the appropriate vehicle clearance interval and to time-out this interval independently before advancing the intersection lights to the phase designated by the central controller.

3,784,972
SEAT BELT SYSTEM
Arthur E. Hults, 11019 Reichling Ln., Whittier, Calif.
Filed Jan. 24, 1972, Ser. No. 220,254
Int. Cl. B60r *21/10*
U.S. Cl. 340—52 E **6 Claims**

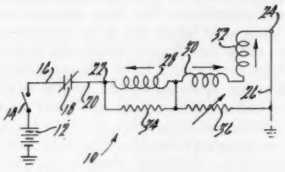


A vehicle seat belt system for use in automobiles, buses, airplanes, boats and the like. A seat system responsive to the occupancy of a seat by a passenger and use of the seat belt for that seat. A switch system actuated by said seat system. A signal system controlled by the switch system for signaling non-use of a seat belt of an occupied seat. A vehicle power system controlled by the switch system. The vehicle power system being inoperative when the seat belt of an occupied seat is not in use. A delay cut-off switch in said switch system which delays for a predetermined time interval the rendering of the vehicle power system inoperative when a seat belt is disengaged during operation of the vehicle.

3,784,973
LIQUID LEVEL MAGNETIC GAUGE CIRCUITRY
James F. Burgett, Garden City; Lawrence J. Vanderberg, and Gary F. Woodward, both of Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed May 22, 1972, Ser. No. 255,608
Int. Cl. G08b *21/00*
U.S. Cl. 340—59 **4 Claims**

Magnetic gauge circuitry in which a magnetic gauge has a plurality of coils and has indicating means responsive to current in the coils is provided with switching means for interrupting the current flowing to the coils. The gauge may be constructed to maintain its reading even though its input current has been interrupted. Current interruption to the gauge occurs when the switching means undergoes accelerations or

decelerations or a change in its orientation with respect to the earth's gravitational field. The magnetic gauge circuitry is par-



ticularly advantageous when used in the measurement of the liquid level in a fuel tank of a motor vehicle.

3,784,974

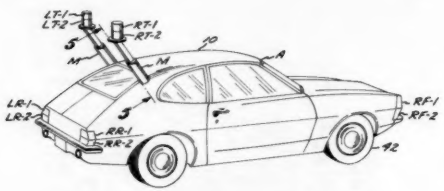
DRIVER'S COMMUNICATING SIGNAL LIGHTS FOR ACCELERATING, BRAKING AND TURNING OPERATIONS

Carl H. Hamashige, 1445½ Lime Ave., Long Beach, Calif.

Filed May 14, 1971, Ser. No. 143,432

Int. Cl. B60q 1/38

U.S. Cl. 340—67 **4 Claims**



An electrically operated communicating signal light assembly that is mounted on an automotive vehicle, and is automatically actuated to visually indicate from either the rear, front or side thereof that the vehicle is being accelerated, braked or turned, and if turning whether the same is at a steady or accelerated rate of speed.

3,784,975

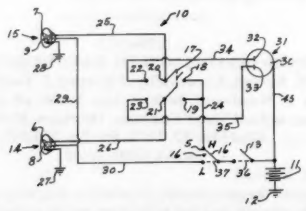
ALTERNATELY FLASHING WARNING SYSTEM

Richard W. Ward, Westchester, Ohio, assignor to KD Lamp Co., Cincinnati, Ohio

Continuation of Ser. No. 103,427, Jan. 4, 1971, abandoned. This application Dec. 12, 1972, Ser. No. 314,372

Int.0032B60q 1/52

U.S. Cl. 340—76 **1 Claim**



The high beam filaments of a vehicle's headlights are controlled to flash in order to provide a warning signal. A double-pole, double-throw flasher swtich, in one position, completes a circuit from a battery through a flasher to the high beam filaments of the headlight to flash the high beams. In the other flasher switch position, the high beams are connected to the battery via the dimmer and main "on-off" switches. Flashing of the high beams in response to activation of the flasher switch is independent of the position of the conventional "on-off" headlight switch and dimmer switch by virtue of the fact that these two switches are not in the flasher circuit. Steady low beam operation may be maintained during the high beam flashing operation, and independently of it, by the dimmer and "on-off" switches, which are connected between the low beams and the battery.

3,784,976

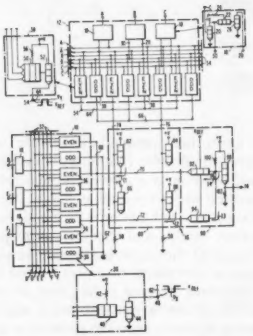
MONOLITHIC ARRAY ERROR DETECTION SYSTEM

Irving T. Ho, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 101,680, Dec. 28, 1970, abandoned. This application Apr. 10, 1972, Ser. No. 242,667

Int. Cl. G06f 11/10

U.S. Cl. 340—146.1 AG **5 Claims**



An error detection system of n inputs is adaptable for fabrication in large scale integrated circuit form. An integrated circuit logic array provides a parity check in response to digital signals received via X and Y decoders. Reduction in the number of array cells and the X and Y driving decoder circuits is obtained by interconnecting even parity subgroups and odd parity subgroups of lines from the X and Y decoders to provide even master parity lines and odd master parity lines. A logic array having less than 2^n operative cells compares the signals on the master lines and generates an error parity signal. The improvement described herein specifically separates the decoder driver circuits into independent subgroups, each having their own array comparators for handling a large number of inputs.

3,784,977

SELF-TESTING CHECKING CIRCUIT

William C. Carter, Ridgefield, Conn., and Aspi B. Wadia, Shrub Oak, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 20, 1972, Ser. No. 264,693

Int. Cl. G06f 11/12

U.S. Cl. 340—146.1 AB **4 Claims**

There is disclosed a self-testing checking circuit which checks that greater than or equal to k out of n input variables are 1. This circuit has the output (1,0) or (0,1) if the $\geq k$ condition is satisfied and the output (0,0) or (1,1) if it is not. The circuit is self-testing, i.e., every line other than the primary inputs is tested during normal operation. The logical equation representing this circuit is

$(c_{k,n},d_{k,n}) = (\bar{a}_n e_{k,n-1}(a_1,a_2,\ldots,a_{n-1}), a_n e_{k-1,n-1}(a_1,a_2,\ldots,a_{n-1}))$

wherein $a_1,\ldots,a_n$ are the n input variables, $e_{k,n}(a_1,a_2,\ldots,a_n)$ denotes the function with the threshold k, the function being 1

if greater than or equal to k of the n input variables $a_1, a_2, \ldots, a_n$ are 1. It is suitably implemented as an OR circuit of $\binom{n}{k}$ AND circuits, each of the latter AND circuits being a conjunct constituted by k of the n input variables. The function ($c_{k,n}, d_{k,n}$) is a two-output threshold k function, i.e., it is (0,1) or (1,0) if greater than or equal to k out of the n input variable are 1 and (0,0) otherwise. Logical equations representing the two output k threshold function are

$$c_{k,n}=\bar{a}_n a_1 a_2 \ldots a_k \vee \bar{a}_n a_1 a_2 \ldots a_{k-1} a_{k+1} \vee \ldots \vee \bar{a}_n a_{n-k} \ldots a_{n-1}$$

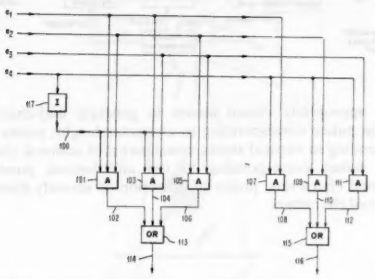
$$d_{k,n}=a_n a_1 a_2 \ldots a_{k-1} \vee a_n a_1 a_2 \ldots a_{k-2} a_k \vee \ldots \vee a_n a_{n-k+1} \ldots a_{n-1}$$

wherein v represents the OR function.

A two-output self-testing circuit which checks for less than or equal to k out of n input variables equal to 1 is represented by the following logical equation

$$(g_{k,n}, h_{k,n})=(a_n v f_{n-k,n-1}(a_1, \ldots, a_{n-1}), a_n v f_{n-k-1,n-1}(a_1, \ldots, a_{n-1}))$$

wherein ($g_{k,n}$, $h_{k,n}$) is the two output threshold which is (0,1)



or (1,0) if less than or equal to k out of n input variables are 1, $a_1, \ldots, a_n$ are the input variables, $f_{k,n}$ is the function with the threshold k, i.e., it is 0 if greater than or equal to k out of n inputs are 0. The function $f_{k,n}$ is represented by the following equation

$$f_{k,n}=(a \vee a_2 \vee a_2 \vee \ldots \vee a_k)(a_1 v a_2 v \ldots v a_{k-1} v a_{k+1}) \ldots (a_{n-k+1} v \ldots v a_n)$$

which comprises $\binom{n}{k}$ OR circuits providing inputs to an AND circuit, each OR circuit being constituted by a disjunct of k input variables. By providing the outputs of both of the two-output circuits mentioned above to a morphic AND circuit, there is provided a circuit which indicates whether greater than or equal to i of the input variables and less than or equal to k of the input variables are 1. When this condition is obtained, the output of the morphic AND circuit is either (0,1) or (1,0).

3,784,978

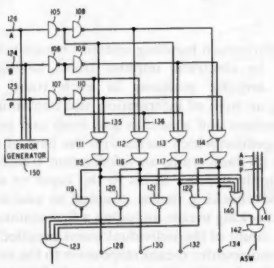
SELF-CHECKING DECODER

Meyer Joseph Zola, Columbus, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 14, 1973, Ser. No. 332,349

Int. Cl. H03k *13/34*

U.S. Cl. 340—146.1 AB **11 Claims**



The self-checking decoder of the present invention includes a number of logic NAND gates arranged to process input address and parity signals in such a manner that if a fault exists in the input codes or the decoder, the decoder will either properly decode the input address or will signal the presence of the defect. In addition, if invalid code combinations are applied to the circuit on a regular or selective basis, the circuit is arranged to signal the existence of faults of which the circuit was tolerant.

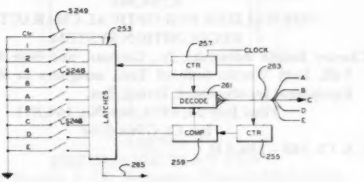
3,784,979

RESPONSE SYSTEM WITH IMPROVED COMPUTATIONAL METHODS AND APPARATUS

David Friedman, Framingham, Mass., and Bernard Mortimer Segal, Binghamton, N.Y., assignors to The Singer Company, Binghamton, N.Y.

Division of Ser. No. 62,382, Aug. 10, 1970, Pat. No. 3,658,243. This application Sept. 20, 1971, Ser. No. 182,117

U.S. Cl. 340—146.2 **8 Claims**



An improved classroom response system of the type wherein a number of students are provided with individual responders each having a plurality of switches selectively operable to indicate the student's choice of response to a question or other stimulus. The invention is directed to novel methods and apparatus for performing arithmetic operations and displays which make available to the instructor information helpful in conducting the class and otherwise simplify instructional tasks. Included are means for automatically indicating which of several responses is "correct" by determining the response to which the highest weight has been assigned by the instructor. Also disclosed are novel means to calculate each individual student's cumulative score and to indicate automatically the students whose scores fall below a preselected acceptable percentage of the maximum possible score. Displays of the total number of students responding to a given question, and the percent of the class which has responded with any of the possible choices are provided.

3,784,980

SERIALLY OPERATED COMPARISON SYSTEM WITH DISCONTINUANCE OF COMPARISON ON FIRST MISMATCH

Michel Geesen, Boulogne, France, assignor to Societe dite: Electroniques Marcel Dassault, Paris, France

Filed June 8, 1972, Ser. No. 260,812

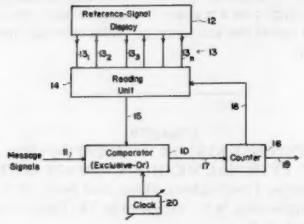
Claims priority, application France, June 10, 1971, 7121091

Int. Cl. G06f *7/02*; H03d *13/00*

U.S. Cl. 340—146.2 **6 Claims**

The components of a message signal to be identified are serially fed to a comparator which compares them, one at a time, with like-ranking components of a reference signal registered in a display unit. Upon detecting a match between the first components of the two signals, the comparator steps a counter to call out from the display unit the second component of the reference signal for comparison with that of the incoming message signal, and so forth. In the event of a

mismatch, the counter is reset; if all components match, an output signal is given. If the signals are in binary code, the



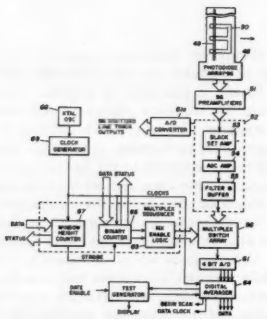
comparator is a logic circuit; if they are composed of a series of different frequencies, the comparator is a mixer.

3,784,981

NORMALIZER FOR OPTICAL CHARACTER RECOGNITION SYSTEM

Chester Joseph Borowski, Jr., Garland, and Dale Rodney Du Vall, Fort Worth, both of Tex., assignors to Recognition Equipment Incorporated, Irving, Tex.

Filed July 28, 1971, Ser. No. 166,811
Int. Cl. G06k *9/04*
U.S. Cl. 340—146.3 H **8 Claims**



Signals produced by optically scanning different sizes and fonts of characters are normalized into a single format of data as an input to a character recognition unit. The signals are obtained by optically scanning characters with a single columnar retina and are used to produce a train of digital signals. Data derived from characters which are larger in size than a selected nominal are normalized by electronically weighting output signals from various photocells in the columnar array, summing the weighted signals and then averaging. The normalized output is delivered to a recognition unit to identify each character.

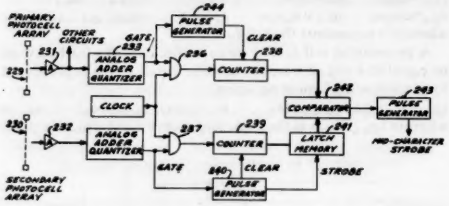
3,784,982

ELECTRO-OPTICAL HANDWRITTEN CHARACTER READER

Arthur Schlang, Woodbury, N.Y., assignor to Isotec Incorporated, Woodbury, N.Y.

Continuation-in-part of Ser. No. 152,104, June 11, 1971. This application Aug. 16, 1971, Ser. No. 172,138
Int. Cl. G06k *9/12*
U.S. Cl. 340—146.3 J **8 Claims**

An electro-optical character reader for handwritten characters includes a linear primary array of scanning cells and circuit means to generate pulses corresponding to the edges of characters scanned, to the number of strokes in the direction of movement of each character, and to the particular character and part thereof being scanned and means to generate stroke termination pulses corresponding to start and end of each character in the direction of character movement. A secondary array of scanning cells is effective in combination



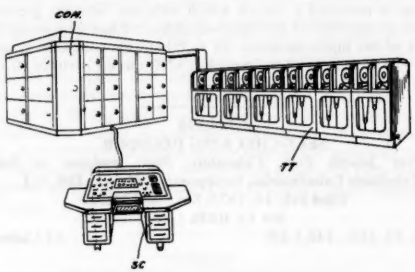
with appropriate circuit means to generate mid-character strobe pulses corresponding to character height, pulses corresponding to vertical stroke components of scanned characters, pulses corresponding to top and bottom points of scanned characters, points of inflection of severely distorted scanned characters.

3,784,983

INFORMATION HANDLING SYSTEM

John Presper Eckert, Jr., Gladwyne; James R. Weiner, Philadelphia, both of Pa.; Robert F. Shaw, Brooklyn, N.Y., and Herbert Frazer Welsh, Philadelphia, Pa., assignors to Sperry Rand Corp., New York, N.Y.

Filed Mar. 31, 1952, Ser. No. 279,710
Int. Cl. G06f *15/00*
U.S. Cl. 340—172.5 **43 Claims**



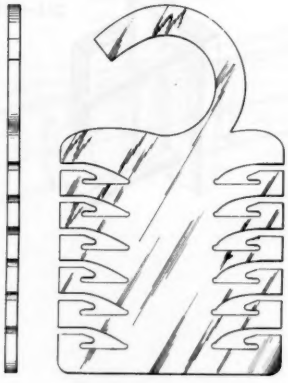
1. In an information handling system wherein information is represented by electrical impulse trains having the same number of impulse positions in each train, each train representing an item of information and containing impulses which are present and absent in and from said positions in a coded arrangement which varies with the item of information represented by each train, an information transfer network, means to supply impulse trains to the input to said transfer network, and checking means coupled to said transfer network, said checking means including a first counter means indicating the count of the individual trains supplied to said network, a second counter means responsive to the individual impulses contained within the trains supplied to said network, and means for periodically indicating when said first and second counter means do or do not tally.

DESIGNS

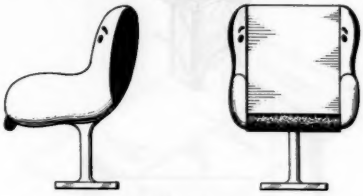
JANUARY 8, 1974

229,796
NECKTIE
Roman A. Eckstein, Albuquerque, N. Mex., assignor of a fractional part interest to Jerome J. Fischer
Filed May 13, 1971, Ser. No. 143,298
Term of patent 14 years
Int. Cl. D2—*05*
U.S. Cl. D2—343

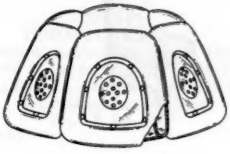
229,797
HANGER FOR NECKTIES OR THE LIKE
Sam Patasnik, 12 Harcourt Road, Plainview, N.Y. 11803
Filed Feb. 14, 1972, Ser. No. 226,382
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—251



229,798
CHAIR
Jerry E. Howard, 1091 S. Towne, Pomona, Calif. 91767
Filed Mar. 1, 1972, Ser. No. 231,060
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—26



229,799
PNEUMATIC PLAY PEN
Shoji Suzuki, 6–11, 3-chome, Higashi-Mukojima, Sumida-ku, Tokyo, Japan
Filed Apr. 6, 1972, Ser. No. 241,888
Claims priority, application Japan Jan. 27, 1972
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—13



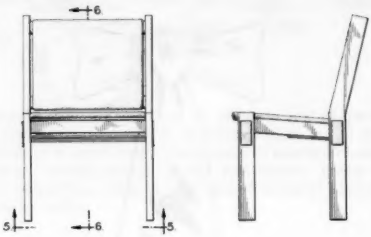
229,800
ROCKING EXERCISE STOOL
Joseph J. Jones, 2212 Longview, Austin, Tex. 78705
Filed Apr. 19, 1971, Ser. No. 135,530
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—32

229,801
BAR STOOL
Roy Bruce Lindvall, St. Peter, Minn., assignor to Beam Furniture, Inc., St. Peter, Minn.
Filed July 17, 1972, Ser. No. 272,169
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—47

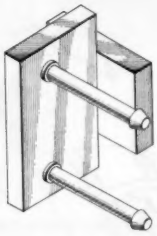
229,802
CHAIR
Roy Bruce Lindvall, St. Peter, Minn., assignor to Beam Furniture, Inc., St. Peter, Minn.
Filed July 17, 1972, Ser. No. 272,455
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—47

229,803
BENCH
Roy Bruce Lindvall, St. Peter, Minn., assignor to Beam Furniture, Inc., St. Peter, Minn.
Filed July 17, 1972, Ser. No. 272,168
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—60

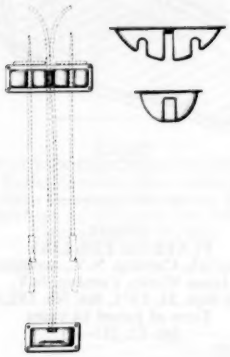
229,804
CHAIR
Herman A. Hassinger, Moorestown, N.J., assignor to Hassinger & Schwam Associates, Inc., Philadelphia, Pa.
Filed May 30, 1972, Ser. No. 258,189
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—78



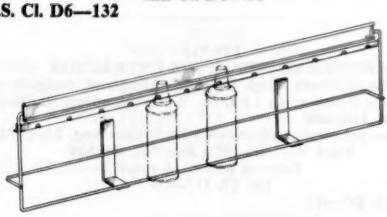
229,805
TISSUE ROLL HOLDER
Curtis G. James, 65 Puritan Place, Hamburg, N.Y. 14075
Filed June 1, 1973, Ser. No. 366,188
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—97



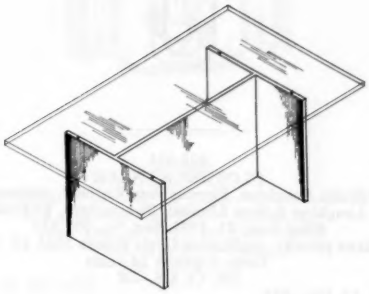
229,806
SKI RACK OR SIMILAR ARTICLE
Walter L. Hasser, 3 Loma Linda Drive, Colorado Springs, Colo. 80906
Filed Nov. 22, 1971, Ser. No. 201,263
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—125



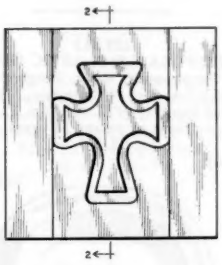
229,807
DISPLAY RACK
Donald E. Greenberg, 3163 Beaudry Terrace Glendale, Calif. 91208
Filed Jan. 21, 1972, Ser. No. 219,926
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—132



229,808
TABLE OR THE LIKE
Ronald J. McDonald, 201 E. 61st St., New Rochelle, N.Y. 10021
Continuation of design applications Ser. No. 18,144 and Ser. No. 18,152, both June 18, 1969, and Ser. No. 20,723, Dec. 31, 1969. This application Apr. 20, 1970, Ser. No. 22,536
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

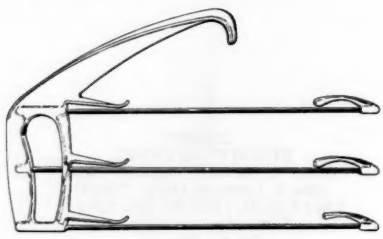


229,809
FURNITURE PANEL
James A. Snowden, Okemah, Okla. (Rte. 1, Carnegie, Okla. 73015)
Filed Feb. 24, 1972, Ser. No. 229,257
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192



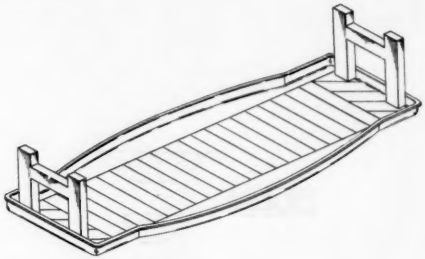
229,810
DISPLAY HANGER FOR BOOTS
Michael Wahl, Searington, N.Y., assignor to Wahl Associates, Inc., Long Island City, N.Y.
Filed Mar. 28, 1972, Ser. No. 239,002
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—252

229,811
CLOTHES HANGER
Malcolm Laughton, Birmingham, England, assignor to Laughton & Sons Limited, Birmingham, England
Filed Sept. 21, 1972, Ser. No. 291,037
Claims priority, application Great Britain Mar. 21, 1972
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—252



229,812
DISPOSABLE PLASTIC DISH
Paul Davis, Swampscott, Mass., assignor to Sweetheart Plastics, Inc., Wilmington, Mass.
Filed Jan. 31, 1972, Ser. No. 222,428
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—1

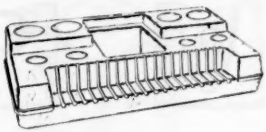
229,813
BEVERAGE TRAY
Allan Robinson, 25 Kilsyth Road, Brookline, Mass. 02146
Filed Apr. 14, 1972, Ser. No. 244,322
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—21



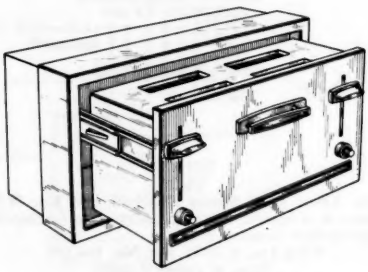
229,814
PLATE OR THE LIKE
Keith D. Popovich, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Sept. 21, 1971, Ser. No. 182,569
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—36

229,815
POWER-DRIVEN JUICE EXTRACTOR
Brian Scott Smith, High Wycombe, England, assignor to Tower Housewares Limited, Wolverhampton, Staffordshire, England
Claims priority, application Great Britain Aug. 25, 1972
Filed Nov. 15, 1972, Ser. No. 306,809
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—48

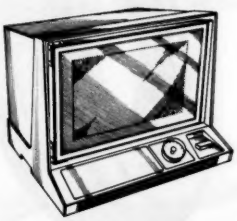
229,816
PORTABLE SERVING BAR
Larry N. Wynveen, Sheboygan, and Stephen J. Jambretz, Jackson, Wis., assignors to Thanco, Inc.
Filed Dec. 23, 1971, Ser. No. 211,833
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—71



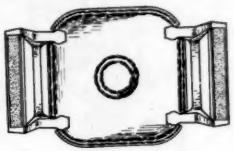
229,817
BUILT-IN ELECTRIC TOASTER
Norman A. Beam, Boonville, Mo., assignor to McGraw-Edison Company, Milwaukee, Wis.
Filed Sept. 21, 1972, Ser. No. 290,943
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—93



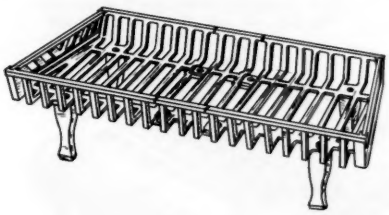
229,818
MICROWAVE OVEN
Eldon J. Klemp, Mayer, and Vernon E. Cassibo, New Hope, Minn., assignors to Litton Systems, Inc., Beverly Hills, Calif.
Filed Feb. 16, 1973, Ser. No. 333,195
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



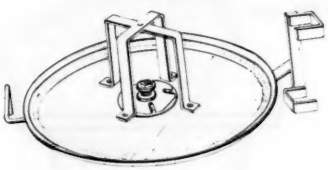
229,819
HANDLED SUPPORT STAND FOR A COOKING VESSEL
Richard B. Hall, Glen Ellyn, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed July 10, 1972, Ser. No. 270,497
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—130



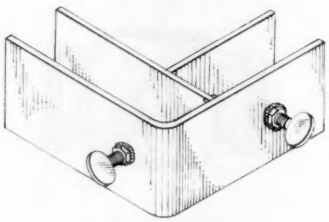
229,820
FIREPLACE GRATE
Richard W. Mellow, Jr., Ladue, Mo., assignor to Liberty Foundry Co., St. Louis, Mo.
Filed Mar. 16, 1972, Ser. No. 235,462
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D7—207



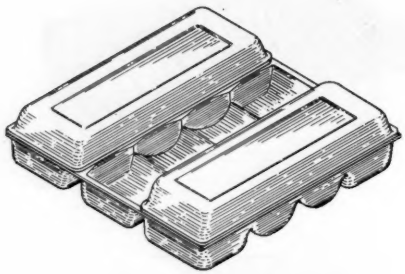
229,821
COILED WIRE DISPENSER
Francis Kurt Bourhenne, 1308½ Anaheim St., Harbor City, Calif. 90710
Filed Feb. 5, 1973, Ser. No. 329,658
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—220



229,822
SCAFFOLD BRACKET
John H. Born, 2002 W. 31st N.,
Wichita, Kans. 67204
Filed Feb. 23, 1972, Ser. No. 228,789
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—236



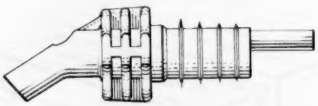
229,823
CONTAINER FOR BAKERY PRODUCTS
William Henry Day, Brantford, Ontario, Canada, assignor to W. R. Grace & Co., Duncan, S.C.
Filed Feb. 8, 1972, Ser. No. 224,649
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—183



229,824
BASE FOR A CONTAINER
Herbert R. Erickson, Denver, Colo., assignor to Best Quality Plastics, Inc., Denver, Colo.
Filed Feb. 3, 1972, Ser. No. 223,400
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219

229,825
ACTUATOR CAP FOR A PRESSURIZED CONTAINER
Thomas H. Hayes, Westport, Conn., assignor to VCA Corporation, Greenwich, Conn.
Filed Apr. 24, 1972, Ser. No. 247,225
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—258

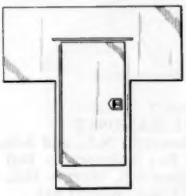
229,826
POURING SPOUT
George M. Raptis, 17866 Vicino Way,
Pacific Palisades, Calif. 90272
Filed Sept. 15, 1972, Ser. No. 289,295
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—277

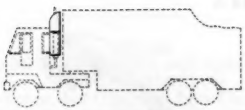


229,827
TIRE
Claude Albert Hart, Sutton Coldfield, and Eric William Haycock, Alrewast, England, assignors to Dunlop Holdings Limited, London, England
Filed Jan. 5, 1971, Ser. No. 104,194
Term of patent 7 years
Claims priority, application Great Britain July 23, 1970
Int. Cl. D12—*15*
U.S. Cl. D12—152

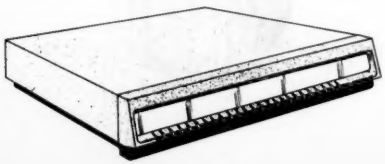
229,828
PORTABLE CHEMICAL TOILET
William J. Hinkley, 106 E. Washburn, La Crosse, Wis. 54601
Filed June 12, 1972, Ser. No. 261,741
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1 L

229,829
AIRFOIL CABINET FOR A TRUCK
Leo G. Arnold, Jr., 801 St. Louis St., Joplin, Mo. 63031
Filed Oct. 12, 1972, Ser. No. 297,075
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6 A



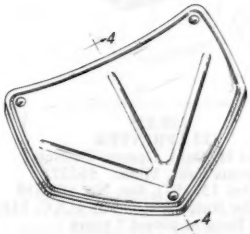


229,830
DIGITAL COMPUTER
John W. Carroll, Pepperell, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Apr. 27, 1972, Ser. No. 248,355
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



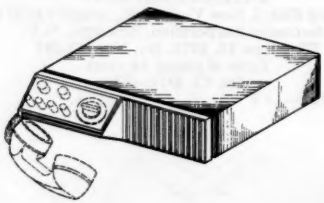
229,831
UTILITIES POST
Donald F. Sparling, 425 NE. 32nd St., Boca Raton, Fla. 33432
Filed July 19, 1971, Ser. No. 164,203
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—12

229,832
ANTENNA HOUSING
Edward Finkel, New York, N.Y., assignor to JFD Electronics Corporation, Brooklyn, N.Y.
Filed June 15, 1971, Ser. No. 153,487
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 F

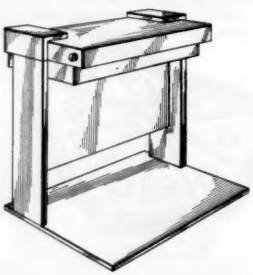


229,833
STEREOPHONIC HEAD SET
Sidney Becker, Woodbury, N.Y., assignor to Stanton Magnetics, Inc., Plainview, N.Y.
Filed Sept. 30, 1971, Ser. No. 185,468
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D26—14 H

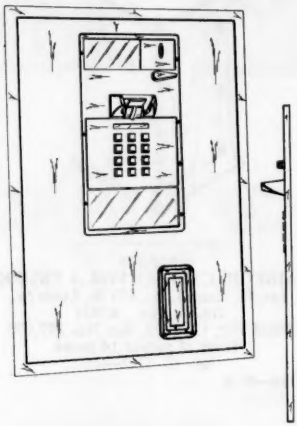
229,834
TWO-WAY RADIO HOUSING OR SIMILAR ARTICLE
Terrance N. Taylor, Cary, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Dec. 15, 1971, Ser. No. 208,528
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 K



229,835
TELEPRINTER
Forrest H. Dahl, General Delivery, Fergus Falls, Minn. 56537
Filed Oct. 13, 1971, Ser. No. 188,630
(Filed under Rule 47(b) and 35 U.S.C. 118)
Term of patent 7 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 R



229,836
TELEPHONE PANEL ENCLOSURE
William M. Wollet, Huntsville, Ala., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed June 30, 1972, Ser. No. 267,836
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

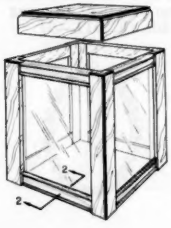


229,837
TELEPHONE HANDSET
Donald Michael Genaro, Haworth, N.J., and John Niel McGarvey, Drexel Hill, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Apr. 13, 1973, Ser. No. 351,081
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

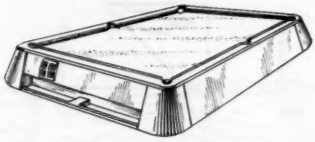
229,838
COMBINED FRAMED AQUARIUM AND COVER THEREFOR
Boyd R. Johnson, 519 C St., Salt Lake City, Utah 84103
Filed Oct. 4, 1971, Ser. No. 186,580
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—8

229,839
AQUARIUM
Irving Schlesinger, Laguna Niguel, and Charles Fleenor, Laguna Beach, Calif., assignors to South Bay Treasure, Inc., doing business as Treasure Industries, Hawthorne, Calif.
Filed Mar. 27, 1972, Ser. No. 238,732
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—9

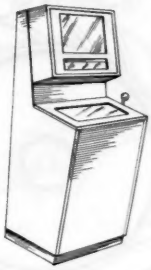
229,840
COMBINED FRAMED AQUARIUM AND COVER THEREFOR
Boyd R. Johnson, 519 C St., Salt Lake City, Utah 84103
Filed June 14, 1971, Ser. No. 153,151
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—12



229,841
BILLIARD TABLE TOP
Phillip E. Crossman, Green Bay, Wis., assignor to The Brunswick Corporation
Filed Mar. 8, 1972, Ser. No. 232,995
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—3

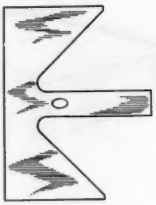


229,842
CABINET FOR A COIN-CONTROLLED AMUSEMENT MACHINE
Joseph E. Lally, McHenry, and Terrence A. Reedy, Jr., Skokie, Ill., assignors to Bally Manufacturing Corporation, Chicago, Ill.
Filed July 14, 1971, Ser. No. 162,737
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5

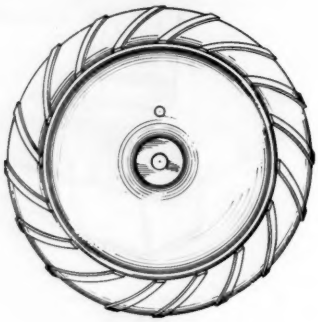


229,843
GOLF TEACHING AID
Leroy Goans, 6217 Fairhurst Ave., Cincinnati, Ohio 45213
Filed Feb. 16, 1972, Ser. No. 227,010
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GC

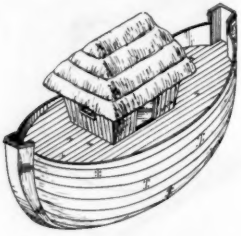
229,844
GOLF CLUB HEAD
Richard Pavelle, 756 N. Country Club Drive, Tucson, Ariz. 85716
Filed Feb. 17, 1972, Ser. No. 227,315
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



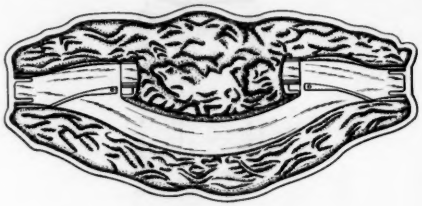
229,845
WHEEL FOR A JUVENILE VEHICLE
Vlktor Schreckengost, Cleveland Heights, Ohio, assignor to The Murray Ohio Manufacturing Co., Nashville, Tenn.
Filed Sept. 22, 1971, Ser. No. 182,927
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



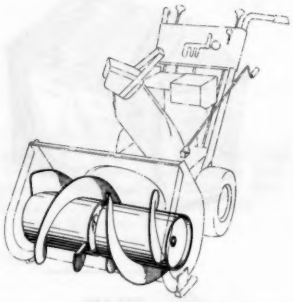
229,846
TOY ARK
Donald A. Rae and Madalene B. Ray, both of Box 51, Jenkintown, Pa. 19046
Filed Dec. 8, 1971, Ser. No. 206,231
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 JJ



229,847
TOY ROADWAY SECTION
Russell C. Edmisson and LC J. Kingsbury, Manhattan Beach, and George Soulakis, North Hollywood, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 13, 1971, Ser. No. 207,726
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 MM



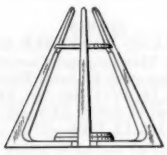
229,848
SNOW AUGER
Robert A. Mittelstadt, Burnsville, and John M. Berner, Minneapolis, Minn., assignors to Toro Manufacturing Corporation, Minneapolis, Minn.
Filed Sept. 23, 1971, Ser. No. 183,302
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D35—2 B



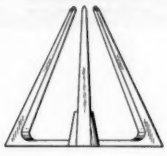
229,849
EXPANDABLE GEM SETTING
Walter H. Glaser, Kaufbeuren-Neugablonz, Germany, assignor to E. H. Ashley & Company, Inc., Providence, R.I.
Filed July 6, 1971, Ser. No. 160,249
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—1 B

229,850
PENDANT OR THE LIKE
Albert F. Loertz, 5825 Guilford Ave., Indianapolis, Ind. 46220
Filed June 21, 1972, Ser. No. 264,904
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—15

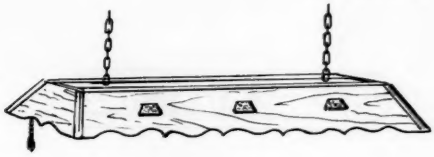
229,851
CANDLESTICK
Frederick W. Lindblad, 7 Hatherbury Court, Prestbury Subdivision, Aurora, Ill. 60504
Filed Nov. 29, 1972, Ser. No. 310,381
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D48—2



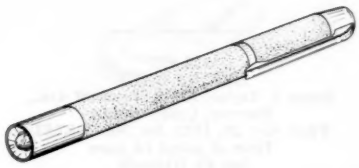
229,852
CANDLESTICK
Frederick W. Lindblad, 7 Hatherbury Court, Prestbury Subdivision, Aurora, Ill. 60504
Filed Nov. 29, 1972, Ser. No. 310,382
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D48—2



229,853
LIGHT FIXTURE
Harry Taormina, 8427 Dacosta, Downey, Calif. 90240
Filed May 8, 1972, Ser. No. 251,581
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—23 A

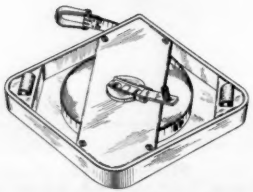


229,854
FLASHLIGHT
Harold F. Bajusz, Woodridge, N.J., assignor to Accutec, Inc., Wallington, N.J.
Filed June 5, 1972, Ser. No. 260,053
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 A

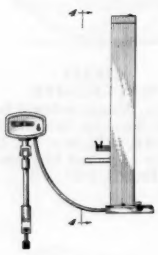


229,855
GAS LIGHTER
Kenjiro Goto, Tokyo, Japan, assignor to Mansei Kogyo Kabushiki Kaishya, Saitama, Japan
Filed Feb. 16, 1972, Ser. No. 227,002
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R

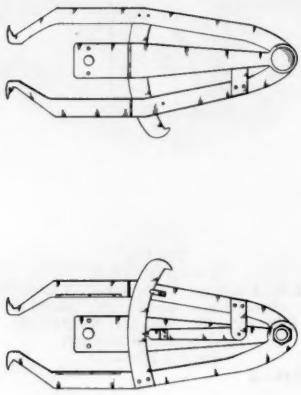
229,856
TAPE MEASURE
Michel Quenot, Besancon, France, assignor to Stanley Mabo, Besancon, France
Filed Jan. 5, 1972, Ser. No. 215,709
Claims priority, application France July 12, 1971
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—1 R



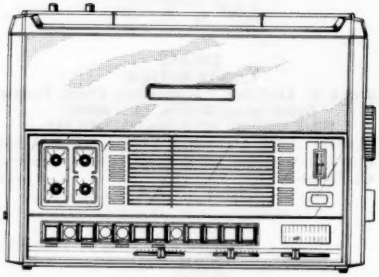
229,857
HEIGHT GAGE
James L. Taylor, 12319 Woodruff Ave., Downey, Calif. 90024
Filed Nov. 20, 1972, Ser. No. 308,052
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 R



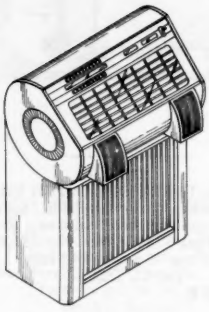
229,858
SPECTACLE FRAME CALIBRATOR
Joseph Santinelli, 36 Bucknell Drive, Plainview, N.Y. 13137
Filed Feb. 15, 1973, Ser. No. 332,901
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D52—6 B



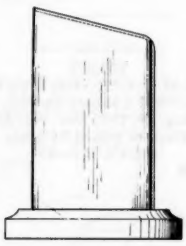
229,859
MULTI-BAND PORTABLE RADIO
Richard Culbertson, Manlius, and Cornelius W. Christie, Fulton, N.Y., assignors to General Electric Company
Filed Feb. 16, 1972, Ser. No. 226,996
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



229,860
PHONOGRAPH CABINET
Robert A. O'Neil and Michael C. Wilson, Glen Ellyn, Ill., assignors to The Seeburg Corporation of Delaware, Chicago, Ill.
Filed Apr. 12, 1972, Ser. No. 243,536
Term of patent 14 years
Int. Cl. D19—*01*
U.S. Cl. D56—4 R

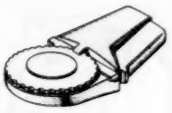


229,861
EYEGLASS HOLDER
Jerome Mende, 109 Roman Ave., Staten Island, N.Y. 10314
Filed Feb. 12, 1973, Ser. No. 331,469
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D57—1 C

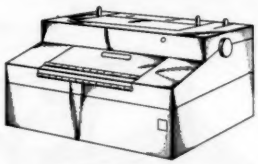


229,862
STILL CAMERA
David E. Hansen, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 13, 1972, Ser. No. 217,722
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1 B

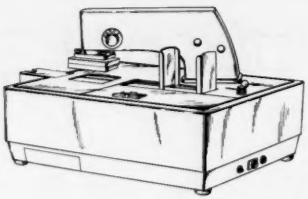
229,863
TAPE EMBOSSING TOOL
Andrew Graybeal, Mountain View, Calif., assignor to Dymo Industries, Inc., Emeryville, Calif.
Filed Apr. 19, 1972, Ser. No. 245,690
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D64—10



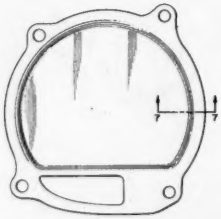
229,864
CABINET FOR TELEPRINTER OR THE LIKE
Berndt Ebbe Frick, 9 Herrgardsvagen, 13500 Tyreso, Sweden
Filed Dec. 22, 1971, Ser. No. 211,169
Claims priority, application Sweden June 23, 1971
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 R



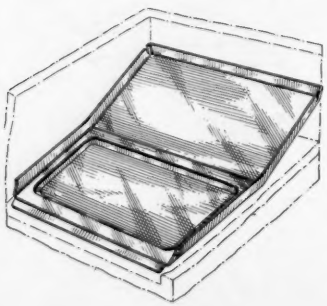
229,865
ELECTRIC PRINTING MACHINE OR SIMILAR ARTICLE
Robert E. Schmeck, Greenwich, Conn., assignor to Adrema Pitney-Bowes GmbH, Heppenheim-Bergstrasse, Germany
Filed Oct. 6, 1972, Ser. No. 295,544
Claims priority, application Germany Apr. 8, 1972
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 B



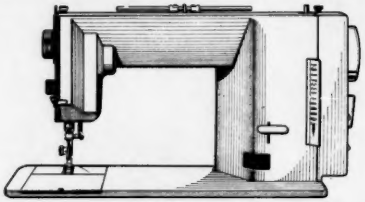
229,866
WATER PUMP BAFFLE
Arthur Marr, 589 Wesley Ave., Oakland, Calif. 94606
Filed Nov. 10, 1971, Ser. No. 197,634
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1 R



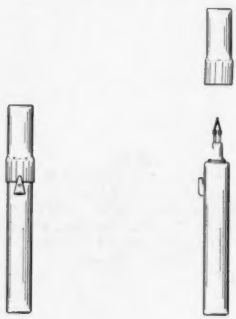
229,867
DRIP PAN FOR REFRIGERATORS OR THE LIKE
Harry R. Shanks, Glen Ellyn, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed June 12, 1972, Ser. No. 261,744
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D67—3 B



229,868
SEWING MACHINE
Marco Zanuso, Milan, Italy, and Richard Sapper, Stuttgart-Degerloch, Germany, assignors to Necchi S.p.A., Pavia, Italy
Filed July 9, 1971, Ser. No. 161,421
Claims priority, application Italy Jan. 26, 1971
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1

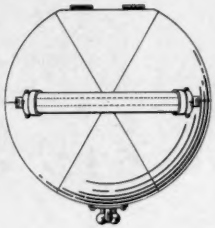


229,869
CAPPED BATTERY OPERATED CAUTERY
David E. Staub, Clearwater, Fla., assignor to Concept, Inc., St. Petersburg, Fla.
Filed June 9, 1971, Ser. No. 151,622
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R

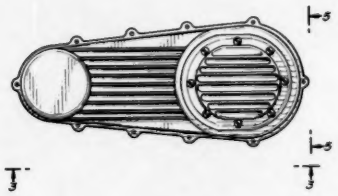


229,870
PORTABLE HANGER FOR LADY'S PURSE
Jane M. Czarny, 5919 Larkins, Detroit, Mich. 48210
Filed Aug. 30, 1972, Ser. No. 284,747
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—2 R

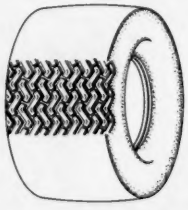
229,871
HANDBAG
Clarence V. Tibbs, 7119 Kingston Pike, Knoxville, Tenn. 37919
Filed Jan. 12, 1973, Ser. No. 323,143
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 F



229,872
COVER FOR PRIMARY CHAIN FOR MOTORCYCLE
Larry L. Ziegler, 1918 5th St., San Fernando, Calif. 91340
Filed Jan. 14, 1972, Ser. No. 218,048
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D90—5



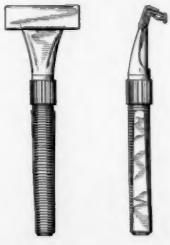
229,873
TIRE
Eugene E. McMannis, Cuyahoga Falls, Ohio, assignor to Max-Trac Tire Co., Inc.
Filed Feb. 17, 1972, Ser. No. 227,344
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R



229,874
BABY BUNTING
Zeev Scharf, 138 Galloway Ave., Staten Island, N.Y. 10302
Filed Mar. 22, 1972, Ser. No. 237,230
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D92—2 R

229,875
SAFETY RAZOR
Martin Glaberson, Ardsley, N.Y., assignor to Warner-Lambert Company, Morris Plains, N.J.
Continuation-in-part of abandoned design application Ser. No. 191,958, Oct. 22, 1971. This application May 3, 1972, Ser. No. 250,100
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A

229,876
SAFETY RAZOR
Martin Glaberson, Stratford, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Sept. 11, 1972, Ser. No. 288,189
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF JANUARY, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O Inc.: *See—*
Friendship, Kenneth F., 3,783,912.

Abbott Laboratories: *See—*
Flouret, George Rogelio, 3,784,535.
Kimura, Eugene Tatsuru; and Anderson, David John, 3,784,702.
Lee, Cheuk Man, 3,784,545.
Prillig, Elliott Benjamin; and Chun, Alexander Hing Chinn, 3,784,683.
Theriault, Robert John, 3,784,447.

Abex Corporation: *See—*
Raymond, David G.; Smith, Gary C., Jr.; and Viles, Alan H., 3,783,743.

Abrahamsson, Sixten. Method for executing time-determined analysis in physical or chemical examination of substances and an apparatus for executing the method. 3,784,816, Cl. 250-273.000.

Abramson, Harvey J., to Searle, G. D., & Co., mesne. Inserter for intrauterine devices. 3,783,861, Cl. 128-127.000.

Accralube Company: *See—*
Caplan, Stanley J., 3,784,472.

ACEC (Ateliers de Constructions Electriquesde Charleroi): *See—*
Bingen, Roald; and Van Hulse, Jacques, 3,784,946.

ACF Industries, Incorporated: *See—*
Tomlin, Jerry B., 3,784,155.

Adachi, Katsuhiro: *See—*
Yamamoto, Katsuo; Sato, Hideo; Iwasa, Toshio; Nakamura, Hisao; and Adachi, Katsuhiro, 3,783,649.

Adams, Alton A.: *See—*
Karmann, Thomas R.; and Adams, Alton A., 3,784,081.

Adams, Karl-Heinz: *See—*
Bossert, Friedrich; Vater, Wulf; Bauer, Kurt; and Adams, Karl-Heinz, 3,784,684.

Adams, Stewart Sanders; Armitage, Bernard John; Nicholson, John Stuart; and Ribera, Antonio, to Boots Pure Drug Company, Limited. Therapeutically active phenylalkane derivatives. 3,784,705, Cl. 424-317.000.

Adler, Jurgen; Erck, Karl; Klebba, Horst; Kramer, Wolfgang; Maneck, Ernst; Mueller-Eckhardt, Hans; and Schwenk, Kurt, to Volkswagenwerk Akt. Automotive window assembly and process. 3,783,568, Cl. 52-400.000.

Adler, Stephen F.: *See—*
Innes, William B.; Michael, Malden W.; and Adler, Stephen F., 3,784,484.

Aerojet-General Corporation: *See—*
Chalfin, Gregory T., 3,784,899.

Agfa-Gevaert Aktiengesellschaft: *See—*
Wagner, Karl; Rosenberg, Otto; and Hummel, Adam, 3,783,757.
Wagner, Karl; and Nicolay, Klaus, 3,783,759.
Winkler, Alfred; Pelte, Richard; Huber, Theodor; and Mayr, Helmut, 3,784,292.

Ahe, Yoshitaka: *See—*
Shinkai, Kinya; Ahe, Yoshitaka; and Izumisawa, Masato, 3,784,868.

Aichenegg, Paul C.: *See—*
Emerson, Carl D.; and Aichenegg, Paul C., 3,784,563.

Aillet, Claude, to Societe Lannionnase d'Electroniques. Multi-step phase shift modulator demodulator. 3,784,914, Cl. 325-30.000.

Air Products and Chemicals, Inc.: *See—*
Cebalo, Tony; and Buntrock, Robert Edward, 3,784,555.

Airco, Inc.: *See—*
Terrell, Ross C., 3,784,706.

Aisin Seiki Kabushiki Kaisha: *See—*
Sugiura, Toshihiro, 3,784,179.

Aitkey, Ian Miller Edington: *See—*
Perrott, Francis Cyric; and Aitkey, Ian Miller Edington, 3,783,793.

Ajax Hardware Manufacturing Corporation: *See—*
Holmes, Frank; Moore, William A.; and Read, George, 3,784,274.

Ajinomoto Co., Inc.: *See—*
Nishida, Hiroshi; Yamamoto, Masao; Kitai, Atsuo; Ozaki, Asaichiro; Nishimura, Yokio; Takemi, Hiroto; and Takemi, Chimo, 3,784,446.

Akasaki, Isamu: *See—*
Kobayasi, Hiroyuki; and Akasaki, Isamu, 3,783,825.

Akin, Cavit; and Chao, Kwei C., to Standard Oil Company (Indiana). Process for reducing the nucleic acid content of single cell protein affording microorganisms. 3,784,536, Cl. 99-14.000.

Akiyama, Jiro, to Kanagawa Kiki Kogyo Company, Ltd. Automatic continuously backflow washing-type filter. 3,784,016, Cl. 210-333.000.

Aktiengesellschaft Brown, Boveri & Cie: *See—*
Lakota, Josip, 3,784,896.

Aktieselskabet Niro Atomizer: *See—*
Hastrup, Niels Erik, 3,784,389.

Akzon Incorporated: *See—*
Muller, Manfred, 3,784,429

Albright & Wilson Limited: *See—*
Lyde, Derek Martin, 3,784,454.

Alcan Research and Development Limited: *See—*
Tripathi, Krishna Chandra, 3,783,664.

Aldea, Gheorghe: *See—*
Coanda, Henry; Aldea, Gheorghe; Bodea, Ion; Truica, Vasile; Hanciulescu, Valentin; Posirca, Radu; Lazar, Cristian; and Gabor, Iacob, 3,784,325.

Alexander, Dale W. Combination dental floss holder and toothpick. 3,783,883, Cl. 132-91.000.

Alfa-Laval AB: *See—*
Olander, Karl Erik, 3,783,837.

Alford, Raymond N.; and Race, Hugh A., to Ingersoll-Rand Company. Oil-controlled piston, and oil control means. 3,783,747, Cl. 92-160.000.

Allais, David C., to National Bank of Commerce of Seattle, mesne. Electro-optical reader for bar codes or the like. 3,784,794, Cl. 235-61.11e.

Allen, Alton K. Filter-silencer for pneumatic devices. 3,783,590, Cl. 55-310.000.

Allen, Bobby H., to D. J. Incorporated. Priming horn. 3,784,066, Cl. 222-514.000.

Allen, Joseph H.; and Wareham, Richard R., to Polaroid Corporation. Collapsible viewing device. 3,783,760, Cl. 95-11.00v.

Allen, William C.: *See—*
Burstein, Albert H.; and Allen, William C., 3,783,860.

Alleva, Leon L.: *See—*
D'Ascoli, Ralph G.; and Alleva, Leon L., 3,784,663.

Allied Chemical Corporation: *See—*
Katlic, John E., 3,784,256.
Moore, William Percy, 3,784,367.
Morgan, Thomas R.; Low, William W.; Wamser, Christian A.; and Bruen, Charles P., 3,784,672.
Oxenrider, Bryce C.; Beyleveld, Wilhelmus M.; and Woolf, Cyril, 3,784,644.

Allis-Chalmers Corporation: *See—*
Geiersbach, Allois F.; and Stich, Frederick A., 3,784,888.
Geiersbach, Allois F.; and Price, Raymond G., 3,784,890.
Rossi, Eugene F., 3,784,107.

Allison, Rudolph L.; and Lindstrand, Gary L., to MTL Incorporated. Ballon and sealing means therefor. 3,783,551, Cl. 46-90.000.

Almand, Edouard, to Creusot-Laire. Method of improving the machinability and mechanical properties of a steel. 3,784,374, Cl. 75-129.000.

Alps Electric Co. Ltd.: *See—*
Ogasawara, Shoji; Tamate, Teruzo; and Sonobe, Toshimitsu, 3,783,698.

Alquist, Henry E., to Phillips Petroleum Company. Oxidative catalytic converter. 3,783,619, Cl. 60-288.000.

Altwicker, Elmar R.; Gibbs, Richard E.; and Kolak, Nicholas P., to Argo Research International, Ltd., mesne. Control of nitrogen oxides from combustion process effluents. 3,784,478, Cl. 252-192.000.

Altzschner, Gustav: *See—*
Schadebrodt, Gerhard; Altzschner, Gustav; Feldmann, Hans-Helmut; Graichen, Bernhard; and Pabst, Wolfgang, 3,783,741.

Aluminium Suisse S.A.: *See—*
Hardt, Jean, 3,784,064.

Aluminum Company: *See—*
Furney, Charles P., Jr., 3,783,669.

Amagami, Keizo; Nishijyo, Masaru; Takahashi, Yutaka; and Nawa, Motoyuki, to Matsushita Electric Industrial Co., Ltd. Fluid amplifier. 3,783,904, Cl. 137-811.000.

Amana Refrigeration, Inc.: *See—*
Foerstner, Richard A.; and Fritts, Rex E., 3,784,781.

Amchem Products, Inc.: *See—*
Cavanaugh, Robert E., Jr., 3,784,404.

Amer, Kenneth B.; and Lund, Herbert T., to Summa Corporation. Coriolis-relieving aircraft rotor assembly. 3,784,319, Cl. 416-135.000.

American Associated Cybernetics, Inc.: *See—*
Dukette, William J., 3,784,879.

American Bank Note Company, mesne: *See—*
Wicker, Ralph C., 3,784,289.

American Chain & Cable Company, Inc.: *See—*
Jankowski, Matthew A.; and Donahue, Simeon J., 3,784,949.

American Cyanamid Company: *See—*
Cohen, Elliott; Sloboda, Adolph Edward; Osterberg, Arnold Curtis; and Child, Ralph Grassing, 3,784,704.

Innes, William B.; Michael, Malden W.; and Adler, Stephen F., 3,784,484.
Schmitt, Edward Emil; Suen, Tzeng Jiueq; and Updegraff, Ivor Heberling, 3,784,585.
Sekiguchi, Hideto; Matsumura, Yasuo; Arai, Kojiro; Haruyama, Kunio; and Wakitani, Mitsuru, 3,784,666.
Tomcufcik, Andrew Stephen; Child, Ralph Grassing; and Sloboda, Adolph Edward, 3,784,701.

American La France, Inc.: *See—*
Specht, Glenn E., 3,784,113.

American Optical Company: *See—*
Koester, Charles J.; and Snitzer, Elias, 3,783,874.

American Optical Corporation: *See—*
Coates, Vincent J.; and Welter, Leonard M., 3,784,815.
Thaler, Sherwood S.; and Daynard, Richard E., 3,783,878.

American Shoe Machinery Corporation: *See—*
Stanton, Leo F., 3,783,464.

Amoco Production Company: *See—*
Dauben, Dwight L.; and Froning, H. R., 3,783,945.
Murphy, Robert P.; and Jones, Frank O., Jr., 3,783,683.

Amos, James H., to Minnesota Mining and Manufacturing Company. Flame equalizer for two or three burner camp stoves. 3,783,856, Cl. 126-38.000.

Amos-Thompson Corporation: *See—*
Neidinger, William K., 3,784,668.

AMP Incorporated: *See—*
Keller, Joseph Richard; and Longenecker, Bruce Cameron, 3,783,662.
Reynolds, Charles Edward; and Gombar, Eugene Leonard, 3,784,955.

Anaconda Company, The, mesne: *See—*
D'Ascoli, Ralph G.; and Alleva, Leon L., 3,784,663.

Anderson, Axel F. L.: *See—*
Engalitcheff, John, Jr.; Facius, Thomas F.; Bradley, Wilson E., Jr.; and Anderson, Axel F. L., 3,784,171.

Anderson, Charles Henri Joseph; and Verwegen, Henricus Johannes, to U.S. Philips Corporation. Connection device for elongate lighting fittings. 3,784,143, Cl. 248-316.00r.

Anderson, David John: *See—*
Kimura, Eugene Tatsuru; and Anderson, David John, 3,784,702.

Anderson Electric Corporation: *See—*
Eddens, Fletcher C.; Corley, William P.; Salling, Jack Ronald; and McDonald, Ralph E., 3,784,137.

Anderson, John R. Reclosable package. 3,784,055, Cl. 221-46.000.

Anderson, Weston Arthur. Electrical conductivity measurement method and apparatus. 3,784,908, Cl. 324-62.000.

Ando, Masao: *See—*
Minami, Hiroshi; Ando, Masao; and Obata, Yoshiharu, 3,784,741.

Andrejewski, Bernard R.: *See—*
Larsen, Eric R.; Andrejewski, Bernard R.; and Edamura, Fred Y., 3,784,608.

Andres, Rudolf; Moller, Hermann; and Seyfried, Franz, to Daimler-Benz Aktiengesellschaft. Pneumatically operating control installation for the automatic alignment of motor vehicle headlights. 3,784,810, Cl. 24-7.11j.

Andresen, Arne O., to Walker Forge, Inc. Machine for forming metal stock for hot forging. 3,783,673, Cl. 72-407.000.

Andrews, Roger Wayne. Novelty electric motor. 3,783,550, Cl. 46-45.000.

Angenenot, Jacob Anton, to Hoesch Aktiengesellschaft. Method of and apparatus for strapping and labeling of objects. 3,783,575, Cl. 53-3.000.

Ao, Hideki: *See—*
Nakanishi, Michio; Arimura, Katsuo; and Ao, Hideki, 3,784,551.

Aoki, Katashi. Injection blow-molding apparatus. 3,784,348, Cl. 425-324.00b.

Apeco Corporation: *See—*
Pollack, Melvin, 3,784,050.

Apgar, Edward G., to United States of America, Transportation. Focusing protective enclosure for ultrasonic transducer. 3,783,967, Cl. 181-.5ed.

APL Corporation: *See—*
Pearl, Curt Charles, 3,784,084.

Appleby, Paul E.: *See—*
Woodhall, Edwin S.; Appleby, Paul E.; and Touchette, John W., 3,784,426.

Appleby, Paul E.; Folden, Denver C.; and Kubinski, Donald C., to Goodyear Tire & Rubber Company, The. Tire building apparatus. 3,784,437, Cl. 156-401.000.

Aqua-Chem, Inc.: *See—*
Schrage, Donald J., 3,783,802.

Arai, Kaneyoshi: *See—*
Namikawa, Mamoru; and Arai, Kaneyoshi, 3,784,796.

Arai, Kojiro: *See—*
Sekiguchi, Hideto; Matsumura, Yasuo; Arai, Kojiro; Haruyama, Kunio; and Wakitani, Mitsuru, 3,784,666.

Araki, Yoshitoshi; Yanagisawa, Yuzuru; and Nakayama, Akira, to Sony Corporation. Method and apparatus for electron tubes. 3,784,862, Cl. 313-174.000.

Araujo, Roger J.; and Sawchuk, Loris G., to Corning Glass Works. Cladding glasses for photochromic optical fibers. 3,784,386, Cl. 106-50.000.

Araya, Kumakichi. Wheel rim. 3,784,260, Cl. 301-97.000.

ARBED-Acieries Reunies de Burbach-Eich-Dudelange: *See—*
Glaesener, Ernest, 3,784,167.

Archbold, Ralph L., to Franklin Manufacturing Company. Washing machine. 3,783,652, Cl. 68-23.700.

Archer, Eric: *See—*
Archer, Erling B., 3,783,636.

Archer, Erling B., to Archer, Eric. Automatic icecube maker. 3,783,636, Cl. 62-353.000.

Arden, Sidney, to Consolidated Foods Corporation; d/b/a Popsicle Industries. Chocolate flavored liquid confections and methods of making the same. 3,784,715, Cl. 426-172.000.

Argo Research International, Ltd., mesne: *See—*
Altwicker, Elmar R.; Gibbs, Richard E.; and Kolak, Nicholas P., 3,784,478.

Aries, Graham John. Stirrer devices for culinary purposes. 3,783,770, Cl. 99-348.000.

Arimura, Katsuo: *See—*
Nakanishi, Michio; Arimura, Katsuo; and Ao, Hideki, 3,784,551.

Arita, Koshei: *See—*
Kinemura, Masao, 3,783,988.

Arizona Chemical Company: *See—*
Scharrer, Roland Pierre Franz, 3,784,537.

Arkell, Alfred: *See—*
Suggitt, Robert M.; Crone, John M., Jr.; and Arkell, Alfred, 3,784,617.

Arlaud, Jean-Claude, to Commissariat a l'Energy Atomique. Thermocouple probe for temperature measurement. 3,783,691, Cl. 73-341.000.

Armitage, Bernard John: *See—*
Adams, Stewart Sanders; Armitage, Bernard John; Nicholson, John Stuart; and Ribera, Antonio, 3,784,705.

Armor Elevator Company, Inc., mesne: *See—*
Lindegger, Robert, 3,783,975.

Armour and Company: *See—*
Knutson, Orlie E.; Gernandt, Louis E.; and Charmoli, Arthur J., 3,783,577.

Armstrong Cork Company: *See—*
Hartzell, Lyndon G.; and Ollinger, James C., 3,783,771.
Ollinger, James C.; and Shenk, John W., 3,784,144.

Armstrong, David Alun; and Lewis, Kenneth Gill, to British Steel Corporation. Strip shape correction on galvanising line. 3,784,072, Cl. 226-1.000.

Arndt, Robert C., to United States of America, Army. PDM-TDM switching matrix. 3,784,751, Cl. 179-15.00a.

Arno, David Michael; and Mohr, John Gilbert, to Johns-Manville Corporation. Traversing mechanism. 3,784,121, Cl. 242-43.000.

Arnold, Orlan M.; and Vancini, Carlo A., to Peabody Engineering Corporation. Liquid-solids separator. 3,784,017, Cl. 210-354.000.

Arnold, Thomas B.; Byrnes, Eugene B.; and Castoe, Alonzo R., to Atlantic Richfield Company. Oil and gas treatment. 3,784,466, Cl. 208-361.000.

ARP Instruments, Inc.: *See—*
Pearlman, Alan R.; and Colin, Dennis P., 3,784,935.

Arpajian, Vasken F.: *See—*
Hutchinson, Herman R.; Arpajian, Vasken F.; and Malcomson, Robert S., 3,784,657.

Arps, Marion T.: *See—*
Schrading, Mark S.; and Arps, Marion T., 3,783,862.

Artz, Klaus: *See—*
Desai, Nalin Binduprasad; Jayaraman, Ponnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, 3,784,559.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Yamamoto, Katsuo; Sato, Hideo; Iwasa, Toshio; Nakamura, Hisao; and Adachi, Katsuhiro, 3,783,649.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Uno, Naoyuki; Nomura, Katsuhiko; Sakazaki, Tadazumi; Watanabe, Koichiro; Miyata, Katsuhiko; and Urano, Fumio, 3,783,765.

Asakuno, Hiroyoshi: *See—*
Hino, Horoyuki; Asakuno, Hiroyoshi; and Yamada, Tetsuya, 3,784,662.

Asanuma, Kazuyoshi, to Tokyo Shibaura Electric Co., Ltd. Electromagnetic locking mechanism for a microwave oven. 3,784,776, Cl. 219-10.550.

Asaoka, Junichi: *See—*
Watanabe, Jun; Hosoi, Susmu; Kuwazaki, Masahiro; Ota, Akira; Takata, Toshikatsu; and Asaoka, Junichi, 3,784,413.

Ashikian, Baruir. Wind operated heating system. 3,783,858, Cl. 126-247.000.

Ashizawa, Yoshimi, to Toshiba Kakai Kabushiki Kaisha. Spinning machine. 3,783,665, Cl. 72-81.000.

Ashley, Eugene, to General Electric Company. Seal. 3,783,737, Cl. 89-7.000.

Assael, Marcel. Device for fixing a covering sheet inside a dihedron formed by two perpendicular surfaces. 3,783,931, Cl. 160-327.000.

Astra Lakemedel Aktiebolag: *See—*
Fischler, Max, 3,784,681.

Atco Corporation: *See—*
Dumit, Josepy P., 3,784,025.

Atkins & Merrill, Incorporated: *See—*
Johnson, Coyote, 3,783,542.

Atlantic Richfield Canada Ltd.: *See—*
Kaminsky, Victor Paul, 3,784,464.

Atlantic Richfield Company: *See—*

Arnold, Thomas B.; Byrnes, Eugene B.; and Castoe, Alonzo R., 3,784,466.
Tomezsko, Edward S. J., 3,784,485.

Atlantic Richfield Company, mesne: *See—*
James, Dean B.; Smiley, Seymour H.; and Whittaker, Ralph E., Jr., 3,784,817.

Atlas Copco Aktiebolag: *See—*
Lauber, Ernst Abraham; and Birrer, Josef, 3,784,257.

Atomic Energy of Canada, Limited: *See—*
McPherson, Neil Freeman; and Hanssmann, Nils, 3,784,778.

Audn Corporation: *See—*
Brendle, Thomas A., 3,784,803.

Auerbach, Sherwin Leonard. Remote fastener for lamps and the like. 3,784,140, Cl. 248-214.000.

August, Eleanor J.: *See—*
Magalotti, Thomas D.; and August, Ernest, 3,784,341.

August, Ernest: *See—*
Magalotti, Thomas D.; and August, Ernest, 3,784,341.

Auphan, Michel Joseph; and Martin Guy, to U.S. Philips Corporation. Dental drilling machine having improved cooling. 3,783,515, Cl. 32-28.000.

Auto Parks, Inc.: *See—*
Keator, Frederic R., 3,783,558.

Automatic Liquid Packaging, Inc.: *See—*
Komendowski, Henry, 3,784,045.

Avco Corporation: *See—*
Kaiser, Robert, 3,784,471.
Zeiders, Glenn W., Jr.; and Bella, Richard A., 3,783,685.

Avdeeva, Tamara Petrovna: *See—*
Nekrasov, Konstantin Dmitrievich; Tarasova, Alexandra Petrovna; Bljusin, Alfred Avgustovich; Avdeeva, Tamara Petrovna; Elin, Vyacheslav Alexandrovich; Roizman, Pavel Aronovich; and Denisenko, Alexandr Panteleevich, 3,784,385.

Avery Products Corporation: *See—*
Avery, R. Stanton; Scharenberg, Robert T.; and Zeidman, Gordon G., 3,784,076.

Avery, R. Stanton; Scharenberg, Robert T.; and Zeidman, Gordon G., to Avery Products Corporation. Web guiding apparatus. 3,784,076, Cl. 226-179.000.

Avions Marcel Dassault: *See—*
Pelat, Patrice, 3,783,738.

Awata, Yoriyoshi: *See—*
Morio, Minoru; and Awata, Yoriyoshi, 3,784,859.

Azegami, Tadashi, to Fisher & Porter Company. Drift-compensated analog hold cricuit. 3,784,919, Cl. 328-127.000.

Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.p.A.: *See—*
Borghi, Vincenzo, 3,783,957.

Baber, James J., Jr.: *See—*
Daugherty, James T.; and Baber, James J., Jr., 3,783,914.

Babin, Frank A.; and Klein, Kenneth E., to SCM Corporation. Photocopying machine. 3,784,304, Cl. 355-67.000.

Bach, Burton E. Finger hole liner for bowling ball. 3,784,198, Cl. 273-63.00a.

Bachle, Wilfred Hugo: *See—*
Richardson, John Lloyd; Segovia, Gilbert; Ju, Fred; and Bachle, Wilfred Hugo, 3,784,470.

Bachmann, Mario E. Transcription control for cassette tape player. 3,784,127, Cl. 242-199.000.

Backstein, Gunter; and Petzsch, Lothar, to Rheinmetall G.m.b.H. Switch for electrical impact detonators. 3,783,791, Cl. 102-70.200.

Badger Company, Inc., The: *See—*
Sheely, Harold R., 3,783,528.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Hilt, Albrecht; Schmidt, Franz; and Schwartz, Erich, 3,784,519.
Pfannmueller, Helmut; Urban, Friedrich; Buechner, Oskar; Gropper, Hans; and Sistig, Wolf, 3,784,538.
Rohr, Wolfgang; and Fischer, Adolf, 3,784,564.

Baermann, Max. Permanent magnet for suspension bearings. 3,784,945, Cl. 335-302.000.

Bagheri, Mansour A. H.; Fitzgerald, Walter P., Jr.; and Sanders, Beatrix Y., to Long-Lok Fasteners Corporation. Method of forming patch-type self-locking screw fasteners. 3,784,435, Cl. 156-293.000.

Bagshawe, Kenneth D.; and Marchant, Derek N., to Hayward Foundation, The. Apparatus for analysing continuously discrete biological liquid samples. 3,784,826, Cl. 250-100.0sc.

Bailey, Rex Edward. Automatic egg turner. 3,783,833, Cl. 119-44.000.

Bailey, Richard J., to GTI Corporation. Conductive shunt for dual-in-line terminal integrated circuit. 3,784,957, Cl. 339-19.000.

Baker, David Keith; Eason, Ronald Charles; Gascoigne, Richard Melville; and Schryver, Andrew, to Rank Organisation Limited, The. Stage lighting control units. 3,784,875, Cl. 315-294.000.

Baker, James G., to Polaroid Corporation. Reflex camera and viewing device. 3,783,764, Cl. 95-42.000.

Baker, James G., to Polaroid Corporation. Corrected optical system for shallow camera or the like, components thereof. 3,784,277, Cl. 350-6.000.

Ball, Allan: *See—*
Ross, Hugh MacDonald; and Ball, Allan, 3,784,153.

Ball Brothers Research Corporation: *See—*
Bancroft, James R.; Cleavinger, Richard L.; and Hall, James M., 3,784,829.
James, Donald N., 3,784,872.

Ball Corporation: *See—*
Cook, Charles W., 3,783,992.

Baltimore Aircoil Company, Inc., mesne: *See—*
Engalitcheff, John, Jr.; Facius, Thomas F.; Bradley, Wilson E., Jr.; and Anderson, Axel F. L., 3,784,171.

Baltimore and Ohio Railroad Company, The: *See—*
Christian, Frank Gordon, Jr., 3,783,798.

Bancroft, James R.; Cleavinger, Richard L.; and Hall, James M., to Ball Brothers Research Corporation. Radiant energy selection means. 3,784,829, Cl. 250-203.0ct.

Bangs, Leigh B.; Huml, James O.; and Layne, Gilbert S., to Dow Chemical Company, The. Corrosion resistant frozen wall. 3,784,371, Cl. 75-68.00r.

Banner, Philip M. Mechanical trim tab means for marine craft. 3,783,817, Cl. 114-66.50p.

Bannies, Hans E., to Plummer, Walter A. Coupling assembly for shielded tubular jacketing. 3,784,730, Cl. 174-75.00c.

Banyu Pharmaceutical Co., Ltd.: *See—*
Matsumoto, Ikuo; and Okazawa, Masao, 3,784,632.

Barclay, Roger, to Pierre, Naquet and Societe Anonyme Laboservice. Viewing apparatus. 3,783,540, Cl. 40-78.070.

Barker, Michael D., to Shell Oil Company. Pesticidal phosphorylated thiazole derivatives. 3,784,554, Cl. 260-302.00e.

Barnhart, Bruce R.; and Hill, David C., to General Motors Corporation. Internal combustion engine ignition spark vacuum advance system. 3,783,846, Cl. 123-117.00a.

Barra, Frank J.; and Murrell, Kenneth R., to Black, Sivalls & Bryson, Inc. Apparatus for separating oil and solids from water. 3,784,010, Cl. 210-114.000.

Barrett, James Howard; and Kelleher, Jack, to Dynamic Technology Limited. Lighting control systems. 3,784,874, Cl. 315-294.000.

Barron, Mark B.: *See—*
Kurz, Bruno; Barron, Mark B.; and Butler, Walter J., 3,784,847.

Barth, Gerhard: *See—*
Mutze, Heinz; Barth, Gerhard; and Kertzscher, Klaus, 3,783,644.

Barton, Stephen R.; and Diebler, Herman G., to Technicon Instruments Corporation. System and method for improved operation of a colorimeter or like optical analysis apparatus. 3,784,310, Cl. 356-181.000.

Basic Incorporated: *See—*
Strong, Herbert W.; Radway, Jerrold E.; and Cook, Henry A., 3,784,680.

Bates, Herbert E.: *See—*
Cocks, Franklin H.; and Bates, Herbert E., 3,784,860.

Battcock, Whalley Vowe: *See—*
Hoy, Herbert Raymond; Johnson, Ronald Leslie; and Battcock, Whalley Vowe, 3,784,108.

Bauer, Benjamin B., to Columbia Broadcasting System, Inc. Decoders for quadruphonic sound utilizing wave mathing logic. 3,784,744, Cl. 179-1.0gq.

Bauer, Donald J.: *See—*
Elges, Carl H., III; Hasket, Philip R.; Bauer, Donald J.; and Lindstrom, Roald E., 3,784,669.

Bauer, Kurt: *See—*
Bossert, Friedrich; Vater, Wulf; Bauer, Kurt; and Adams, Karl-Heinz, 3,784,684.

Bauer, Lieselotte: *See—*
Krueger, Friedrich; and Bauer, Lieselotte, 3,784,469.

Baum, Morton S.: *See—*
Earle, Roland D.; and Baum, Morton S., 3,784,710.

Baumann, Dieter; and Habermeier, Juergen, to Ciba-Geigy Corporation. Long-chain diglycidyl esters. 3,784,525, Cl. 260-78.4ep.

Baumann, Robert F.; Bozza, Eugene F.; and Hunt, Gardner S., to United States of America, Army. Propellant composition containing a nickle silver composite. 3,784,419, Cl. 149-2.000.

Baxter, Gene F.: *See—*
Freeman, Harlan G.; Baxter, Gene F.; and Graham, George, 3,784,515.

Baxter, Gene F.; Freeman, Harlan G.; and Tiedeman, George T., to Weyerhaeuser Company. Rapid curing resin compositions employing a phenol-aldehyde condensation polymer reacted with bis-aryl amine. 3,784,516, Cl. 260-51.500.

Baychem Corporation: *See—*
Emerson, Carl D.; and Aichenegg, Paul C., 3,784,563.

Bayer Aktiengesellschaft: *See—*
Bossert, Friedrich; Vater, Wulf; Bauer, Kurt; and Adams, Karl-Heinz, 3,784,684.
Kume, Toyohiko; and Yasun, Kazuomi, 3,784,654.
Schellhammer, Carl-Wolfgang, 3,784,570.
Schirmer, Hermann; and Peilstocker, Gunter, 3,784,595.
Schrader, Gerhard; and Hammann, Ingeborg, 3,784,653.

Bayer, John W.; and Santiago, Edgardo, to Owens-Illinois, Inc. Polymeric quaternary ammonium compounds and methods for making same. 3,784,529, Cl. 260-79.30m.

Beadle, Bruce R.; and Bollinger, John G., to Giddings & Lewis, Inc. Adaptive machining. 3,784,798, Cl. 235-151.110.

Beaman, Don L.: *See—*
Whitley, Ernest M.; Beaman, Don L.; and McCombie, William S., 3,783,763.

Beck, Gerhard O.: *See—*
Schutt, Dale W.; and Beck, Gerhard O., 3,784,909.

Beckman Instruments, Inc.: *See—*
Peterson, Arnie J.; and Hoffa, Jack L., 3,784,170.

Beeman, Archie W. Revolvable canopy having two point suspension. 3,784,250, Cl. 297-184.000.

Beer, Bernard; Clody, Donald E.; Vogel, John R.; and Horovitz, Zola P., to Squibb, E. R., & Sons, Inc. Anti-anxiety combination. 3,784,688, Cl. 424-244.000.

Beesley, William N., Jr. Portable and disposable dispensing packages. 3,784,022, Cl. 211-49.00d.

Beisiegel, Norbert: *See—*
Strobel, Joseph; and Beisiegel, Norbert, 3,784,290.

Bell & Howell Co.: *See—*
Hartmann, Rudolf, 3,784,305.

Bell & Howell Company: *See—*
Bookless, George W., 3,783,784.
Dorman, Isidore, 3,784,439.
Thiel, John A., 3,784,189.
Thiel, John A., 3,784,191.

Bell Canada-Northern Electric Research, Limited: *See—*
Cambridge, Ronan M.; and Chytil, Milan, 3,784,755.
Haight, William John; and Critchley, John Edward, 3,784,759.

Bell Telephone Laboratories, Incorporated: *See—*
Berkley, David Arthur; and Mitchell, Olga Mary Mracek, 3,784,747.
Blahut, Donald Edgar, 3,784,922.
Brown, Earl Franklin; and Kaminski, William, 3,784,735.
Hughes, Harry Elroy, Jr.; and Wachs, Meyer Herbert, 3,783,499.
King, Michael Charles, 3,783,520.
Lipari, Dominic Timothy, 3,783,682.
Nemchik, Joseph Michael, 3,784,756.
Rando, Robert, 3,784,893.
Rickert, Richard Michael, 3,784,760.
Schroeder, Henry Charles, 3,784,743.
Steidel, Charles A., 3,784,951.
Zola, Meyer Joseph, 3,784,978.

Bella, Richard A.: *See—*
Zeiders, Glenn W., Jr.; and Bella, Richard A., 3,783,685.

Belling & Co., Limited: *See—*
Fourny, Denise Gisele Josette, 3,784,788.

Beltz, Klaus; Frankenfeld, Klaus; and Gotzmann, Karl, to Chemische Fabrik Budenheim. Process for removing iron from phosphoric acid. 3,784,678, Cl. 423-321.000.

Benckiser, Joh. A., GmbH, Chemische Fabrik: *See—*
Krueger, Friedrich; and Bauer, Lieselotte, 3,784,469.

Bendix Corporation, The: *See—*
Erwin, Louis R., 3,783,963.
Kasten, Walter, 3,784,015.

Beneke, Herbert: *See—*
Franck, Heinz-Gerhard; Metzendorf, Walter; Schweym, Erich; Beneke, Herbert; Marrett, Rolf; Nijssen, Jozef; and Omran, Jaafar, 3,784,487.

Benkovic, Roger J., to Eaton Corporation. Hydraulic fluid device and method of assembly thereof. 3,783,744, Cl. 92-57.000.

Benner, Gerald S.: *See—*
Maly, Neil A.; Menapace, Henry R.; and Benner, Gerald S., 3,784,629.
Maly, Neil A.; Menapace, Henry R.; and Benner, Gerald S., 3,784,630.
Menapace, Henry R.; Benner, Gerald S.; and Maly, Neil A., 3,784,631.

Bennett, Kent H. Factormatic slide rule. 3,784,093, Cl. 235-70.00r.

Benson, Alden P.; Foster, Kenneth J.; and Quellette, Alfred R., to United States of America, Navy. Removable goggles for helmet. 3,783,452, Cl. 2-6.000.

Benson, Carl P.: *See—*
Torrant, James Peter; and Benson, Carl P., 3,783,647.

Bergenfield Development Co., Inc.: *See—*
Schmedding, Albert A.; and Pfiefer, Ernest L., 3,783,811.

Berger, Helmut, to Siemens Aktiengesellschaft. Automatic film developing machine with means to sequentially remove film sheets from a magazine. 3,784,834, Cl. 250-477.000.

Berger, Kurt: *See—*
Kartschmaroff, Peter; Moser, Paul; and Berger, Kurt, 3,784,510.

Bergmeister, Eduard; Kirst, Paul-Gerhard; and Winkler, Heinz, to Wacker-Chemie GmbH. Process for the preparation of free-flowing, lump-free, redispersible, synthetic resin powders. 3,784,648, Cl. 260-856.000.

Bergstrom Paper Company: *See—*
Nagler, Robert T., 3,784,596.

Bergum, Bernard C.; and Youngquist, John A., to ESB Incorporated. Battery with duplex electrode construction using continuous metal carrier strip having at least one nonreactive metal side. 3,784,410, Cl. 136-10.000.

Berkey Photo, Inc.: *See—*
Grey, David S., 3,784,287.

Berkley, David Arthur; and Mitchell, Olga Mary Mracek, to Bell Telephone Laboratories, Incorporated. Speech suppression by predictive filtering. 3,784,747, Cl. 179-1.0hf.

Berkowitz, Irving L., to Kason Hardware Corporation. Panel fastener. 3,784,240, Cl. 292-111.000.

Berlin, Evan H. Balancing skill game. 3,784,196, Cl. 273-1.00e.

Berliner, Julius F. T., to Hosiery Mate Company, The. Textile strengthener. 3,784,497, Cl. 260-29.6xa.

Berliner, Wallace H.: *See—*
Doran, E. James; and Berliner, Wallace H., 3,783,638.

Berman, Aaron Robert; deceased (by Berman, Katharine D.; administratrix). Golf ball. 3,784,209, Cl. 273-218.000.

Berman, Katharine D.: *See—*
Berman, Aaron Robert, 3,784,209.

Bernardi Bros., Inc.: *See—*
Bernardi, Donald A., 3,783,466.

Bernardi, Donald A., to Bernardi Bros., Inc. Manually controlled vehicle washing apparatus. 3,783,466, Cl. 15-21.00e.

Berrebi, Claudine: *See—*
Kalopissis, Gregoire; Bouillon, Claude; Manoussos, Georges; and Berrebi, Claudine, 3,784,685.

Berry, William R.: *See—*
Schantz, Spencer C.; and Berry, William R., 3,784,944.

Berthoud, Francois: *See—*
Dubois, Gerald; and Berthoud, Francois, 3,783,606.

Bertorelli, Orlando Leonard, to Huber, J. M., Corporation. Production of finely divided amorphous alumino-silicate pigments from kaolin. 3,784,392, Cl. 106-288.00b.

Bertus, Brent J., to Phillips Petroleum Company. Catalysts and process for dehydrogenation. 3,784,627, Cl. 260-683.300.

Bettor Packages (V.K.) Limited: *See—*
Faggetter, Francis Edward, 3,784,073.

Beverly Enterprises: *See—*
Summersby, E. John; and Nagel, Dietmar, 3,783,867.

Beyleveld, Wilhelmus M.: *See—*
Oxenrider, Bryce C.; Beyleveld, Wilhelmus M.; and Woolf, Cyril, 3,784,644.

Bianchi, Massimo, to Billi, G., & C., S.p.A. Sinker operating cams for circular knitting machines. 3,783,645, Cl. 66-108.00r.

Bichell, William J.: *See—*
Wyman, Dennis G.; Bichell, William J.; and Oliveri, Humber, 3,784,201.

Bickham, Francis L., to Price, H. C., Co. Pipe coating beveler and sealer. 3,784,349, Cl. 425-402.000.

Biddison, John M.; and Donnaker, Clarence W., to Globe Tool and Engineering Company, The. Automatic aramature winding. 3,783,501, Cl. 29-597.000.

Biddle, James G., Company: *See—*
Ironside, Donald S., 3,784,906.

Bigelow, John E., to General Electric Company. Light-dark reflective liquid crystal display. 3,784,280, Cl. 350-150.000.

Bilbrey, Robert A., to West, Benjamin W.; d/b/a California Controls Company. Temperature responsive device. 3,784,095, Cl. 236-101.000.

Bildusas, Leonas L.; and Manske, Wendell J., to Minnesota Mining and Manufacturing Company. Latent image composite master and method. 3,784,394, Cl. 117-1.700.

Billi, G., & C., S.p.A.: *See—*
Bianchi, Massimo, 3,783,645.

Billings, Roy O.; and Henderson, Samuel R., 1/3 to Meyer, Kaye A., mesne. Vehicular power plant. 3,783,613, Cl. 60-38.000.

Bindler, Jakob: *See—*
Model, Ernst; and Bindler, Jakob, 3,784,694.

Bingen, Roald; and Van Hulse, Jacques, to ACEC (Ateliers de Constructions Electriquesde Charleroi). Smoothing choke. 3,784,946, Cl. 336-59.000.

Bio-Dynamics, Inc.: *See—*
Budrose, Charles R., 3,784,763.

Birch, Ralph William. Closure cap. 3,784,041, Cl. 215-40.000.

Birkholz, Manfred: *See—*
Steprath, Werner; and Birkholz, Manfred, 3,783,701.

Birrer, Josef: *See—*
Lauber, Ernst Abraham; and Birrer, Josef, 3,784,257.

Bishop, Ronald Frederick: *See—*
Myers, Mark Stanley; and Bishop, Ronald Frederick, 3,783,470.

Bittern, Joseph E., to Capewell Manufacturing Company. Hole saw and reversible quick disconnect drive therefor. 3,784,316, Cl. 408-204.000.

Bjork, Olov Richard: *See—*
Skattman, Rune Carl Valfrid; and Bjork, Olov Richard, 3,784,159.

Black Clawson Fibreclaim, Inc., mesne: *See—*
Herbert, William; and Kohlhepp, Dean H., 3,783,993.

Black, Sivalls & Bryson, Inc.: *See—*
Barra, Frank J.; and Murrell, Kenneth R., 3,784,010.

Blackley, William D.: *See—*
Siegart, William R.; Blackley, William D.; and Chafetz, Harry, 3,784,362.

Blackwell, Lyman L., to Soiltest, Inc. Apparatus for determination of the density of in-place materials by measurement of their dielectric strength. 3,784,905, Cl. 324-61.0qs.

Blahut, Donald Edgar, to Bell Telephone Laboratories, Incorporated. Adaptive delta modulation decoder. 3,784,922, Cl. 329-104.000.

Bljusin, Alfred Avgustovich: *See—*
Nekrasov, Konstantin Dmitrievich; Tarasova, Alexandra Petrovna; Bljusin, Alfred Avgustovich; Avdeeva, Tamara Petrovna; Elin, Vyacheslav Alexandrovich; Roizman, Pavel Aronovich; and Denisenko, Alexandr Panteleevich, 3,784,385.

Bloxom, C. W. Level. 3,783,525, Cl. 33-379.000.

Blum, Julius A. Knockdown winch assembly for mounting upon a power driven vehicle wheel. 3,784,164, Cl. 254-166.000.

Blurton, Leon C.; and Cina, Saverio J., to Global Marine Inc. Air cushion vehicle. 3,783,627, Cl. 61-46.500.

Bochumer Eisenhutte Heintzmann & Co.: *See—*
Gantre, Franz; Zywietz, Walter; Seiz, Rudolf; and Eickhoff, Heinz, 3,783,625.

Bockmann, Alfred; and Keuerleber, Rudi, to Krauss-Maffei AG. Method of and apparatus for the controlled mixing of two reactive components. 3,784,169, Cl. 259-4.000.

Bodea, Ion: *See—*
Coanda, Henry; Aldea, Gheorghe; Bodea, Ion; Truica, Vasile; Hanciulescu, Valentin; Posirca, Radu; Lazar, Cristian; and Gabor, Iacob, 3,784,325.

Bodenseewerk Perkin-Elmer & Co., GmbH: *See—*
Otte, Eginhart; and Jentzsch, Dietrich, 3,783,694.

Bodine, Albert G. Sonic resonant driving of a column member utilizing compliant resonator element. 3,783,954, Cl. 173-49.000.

Boehringer Mannheim GmbH: *See—*
Braun, Hans, 3,784,006.

Boeing Company, The: *See—*
Das Khandelwal B.; and Strobelt, William E., 3,783,678.

Boekkooi, Anton; and Heeman, Andreas Maria, to U.S. Philips Corporation. Electric lamp. 3,784,807, Cl. 240-41.500.

Boileau, Jacques, to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie. Tire having bi-based carcass. 3,783,925, Cl. .

Bojas, Edward J., to Eaton Corporation. Hydrostatic transmission control system. 3,783,611, Cl. 60-19.000.

Bokros, Jack C., to Gulf Oil Corporation. Percutaneous implant. 3,783,868, Cl. 128-260.000.

Bolen, Waldo B., to Northwestern Corporation, The. Vending machine with counting mechanism. 3,783,986, Cl. 194-2.000.

Bolie, Victor W. Self-regulating artificial heart. 3,783,453, Cl. 3-1.000.

Bollinger, John G.: *See—*
Beadle, Bruce R.; and Bollinger, John G., 3,784,798.

Bolton, Herbert S. Bottle carrier. 3,784,003, Cl. 206-65.00e.

Bonbrake, Bert, Jr.: *See—*
Dix, Keith M.; and Bonbrake, Bert, Jr., 3,783,947.

Booen, James M., to Mallory, P. R., & Co., Inc. Method of making a capacitor. 3,783,480, Cl. 29-25.042.

Bookless, George W., to Bell & Howell Company. Margin control means for duplicator drum. 3,783,784, Cl. 101-248.000.

Boots Pure Drug Company, Limited: *See—*
Adams, Stewart Sanders; Armitage, Bernard John; Nicholson, John Stuart; and Ribera, Antonio, 3,784,705.

Borg-Warner Corporation: *See—*
Boyer, Nicodemus E., 3,784,581.
Crowell, Jack R.; Tomashek, James R.; and Ward, Donald H., 3,783,932.

Borg-Warner Limited: *See—*
Ivey, John Saxon, 3,783,483.

Borghi, Vincenzo, to Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.p.A. Apparatus for supplying loose materials in amounts of weight to continuously moving containers. 3,783,957, Cl. 177-54.000.

Borowski, Chester Joseph, Jr.; and DuVall, Dale Rodney, to Recognition Equipment Incorporated. Normalizer for optical character recognition system. 3,784,981, Cl. 340-146.30h.

Bosch, Robert, G.m.b.H.: *See—*
Duffner, Josef, 3,783,489.
Eheim, Franz; and Schwartz, Reinhard, 3,784,330.
Schneider, Klaus; and Flaschar, Heinz, 3,783,901.
Schneider, Wolfgang; Strohbeck, Gotthilf; Harlin, Walter; Ruckert, Friedrich; and Stahle, Eugen, 3,784,168.
Will, Gerhard, 3,783,713.
Zirps, Wilhelm, 3,784,237.

Bosco, Francis N. Air pollution control method. 3,784,099, Cl. 239-2.00r.

Bossert, Friedrich; Vater, Wulf; Bauer, Kurt; and Adams, Karl-Heinz, to Bayer Aktiengesellschaft. Coronary dilator in a pharmaceutical dosage unit form. 3,784,684, Cl. 424-37.000.

Bosworth, Clive James Arthur, to British Steel Corporation. Internal bead trimmers. 3,783,722, Cl. 83-1.000.

Bottoms, Harry Simister, to Lucas, Joseph, (Industries) Limited. Hydraulic accumulator. 3,783,905, Cl. 138-30.000.

Boucher, Reginald Comyn, to E.P.S. (Research & Development) Limited. Enclosures. 3,783,766, Cl. 98-33.00r.

Bouillon, Claude: *See—*
Kalopissis, Gregoire; Bouillon, Claude; Manoussos, Georges; and Berrebi, Claudine, 3,784,685.

Bourgeois, Norbert Paul, to Etudes et Bonneterie S. A. Mechanism for the control of reversible step-by step rotation of selector drums of circular knitting machines. 3,783,640, Cl. 66-50.00b.

Bourgeois, Norbert Paul, to Etudes et Bonneterie S.A. Alternate winding and unwinding of a two-ended program tape. 3,784,129, Cl. 242-201.000.

Bowe Bohler & Weber KG: *See—*
Weber, Hans-Peter; Litzler, Alfred; Hertig, Jean; Milicevic, Branimir; Fuhring, Heinrich; Sieber, Johannes-Helmut; and 042818, 3,783,650.

Bowerman, William R. Calendar or the like with detachable overlays. 3,783,541, Cl. 40-121.000.

Bowers, David L., to General Electric Company. Body implantable stimulator battery utilization circuit. 3,783,877, Cl. 128-419.000.

Boyer, Nicodemus E., to Borg-Warner Corporation. Substituted norbornene compounds and their applications in thermoplastic polymer compositions. 3,784,581, Cl. 260-464.000.

Bozza, Eugene F.: *See—*
Baumann, Robert F.; Bozza, Eugene F.; and Hunt, Gardner S., 3,784,419.

Bradley, Wilson E., Jr.: *See—*
Engalitcheff, John, Jr.; Facius, Thomas F.; Bradley, Wilson E., Jr.; and Anderson, Axel F. L., 3,784,171.

Bradshaw, Robert Fagan Donat: *See—*
Jackson, John; and Bradshaw, Robert Fagan Donat, 3,784,307.

Bramfitt, Thomas Hugh, to Ethyl Corporation. Dual fuel system. 3,783,849, Cl. 123-127.000.

Brandstetter, Walter R., to General Motors Corporation. Air induction system for an internal combustion engine. 3,783,845, Cl. 123-55.0ve.

Braun, Ernst: *See—*
Braun, Gert; and Braun, Ernst, 3,784,258.

Braun, Gert; and Braun, Ernst, to Halbach & Braun. Guide system for mine-planer blades. 3,784,258, Cl. 299-34.000.

Braun, Hans, to Boehringer Mannheim GmbH. Dragee sorting apparatus. 3,784,006, Cl. 209-73.000.

Braunstein, David M., to Celanese Corporation. Stabilized polyester film. 3,784,507, Cl. 260-45.70p.

Bredeweg, Corwin J.: *See—*
Hickner, Richard A.; and Bredeweg, Corwin J., 3,784,607.

Brelot, Rene; and Tourret, Jean, to Compagnie des Compteurs. Optical comparator with integrated reflectivity compensation. 3,784,309, Cl. 356-156.000.

Brendle, Thomas A., to Audn Corporation. Multi-mode computing circuit. 3,784,803, Cl. 235-195.000.

Bressanelli, Jerome P.: *See—*
Ornitz, Martin N.; Moskowitz, Arthur; and Bressanelli, Jerome P., 3,784,373.

Bridegum, James Earl; and Laczkovich, Rudy A. Level indicator for water tank of recreational vehicle. 3,783,690, Cl. 73-328.000.

Brignard, Francois C.; and Lefranc, Jean E. Vegetable cutting and slicing machine. 3,783,727, Cl. 83-592.000.

Brinkerhoff, Donald E., to General Motors Corporation. Automotive vehicle sound distribution system. 3,784,748, Cl. 179-1.0ve.

Brissey, George E.: *See—*
Richter, Eike; and Brissey, George E., 3,783,502.

British Industrial Plastics, Limited: *See—*
Nicklin, Norman Brian, 3,784,664.

British Steel Corporation: *See—*
Armstrong, David Alun; and Lewis, Kenneth Gill, 3,784,072.
Bosworth, Clive James Arthur, 3,783,722.

Broek, Jan A. Vanden, to Transidyne General Corporation. Fraction computer for multi-component trace. 3,784,789, Cl. 235-61.60a.

Brooks, William R. Mixing and dispensing gun having a replaceable nozzle. 3,784,110, Cl. 239-304.000.

Brosow, Jorgen. Navigation system. 3,784,968, Cl. 340-25.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Kitazawa, Hiroshi, 3,783,641.

Brown, Alexander M., to Sherwood Medical Industries Inc. Syringe package. 3,783,997, Cl. 206-43.000.

Brown, Boveri & Cie AG: *See—*
Depenbrock, Manfred, 3,784,895.

Brown Boveri & Company Limited: *See—*
Kuse, Dieter, 3,784,281.

Brown, Earl Franklin; and Kaminski, William, to Bell Telephone Laboratories, Incorporated. Color television with control of a wobbling beam. 3,784,735, Cl. 178-5.400.

Brown, James A., to Dow Chemical Company, The. Surface conversion treatment for magnesium alloys. 3,784,417, Cl. 148-6.15r.

Brown, Norman Joseph; Packham, Charles Christopher; and Parsonage, Raymond Graham, to Gillette Company, The. Electric shavers. 3,783,508, Cl. 30-43.920.

Brown, Stuart; and Lowe, Warren, to Chevron Research Company. Lubrication oil composition. 3,784,474, Cl. 252-51.50r.

Brown, William M., to Federal Paper Board Company, Inc. Multiple unit container package with consumer tool divider assembly. 3,784,000, Cl. 206-47.00r.

Bruckner, Richard, to Bunker Ramo Corporation. Carrier for integrated circuit packages. 3,784,960, Cl. 339-91.00r.

Bruderer AG: *See—*
Portmann, August Thomas, 3,783,699.
Portmann, August Thomas, 3,784,075.

Brudy, Peter E., to Dominion Auto Accessories, Limited. Retractable truck mirror. 3,784,149, Cl. 248-478.000.

Bruen, Charles P.: *See—*
Morgan, Thomas R.; Low, William W.; Wamser, Christian A.; and Bruen, Charles P., 3,784,672.

Bruggeman, Frans; and Smit, Jacobus C., to N.V. Bekaert S.A. Wire box or crate. 3,784,044, Cl. 220-19.000.

Brush, Donald C.; and Oswald, Robert D., to Sherwood Medical Industries Inc. Sampling syringe. 3,783,998, Cl. 206-43.000.

Bryden, Norman E. Router overarm attachment. 3,783,915, Cl. 144-134.00b.

Bryll, Medard Z., to Gateway Industries, Inc. Seat sensor safety system with improved switch sensor containing slip clutch coupling means. 3,784,769, Cl. 200-52.00r.

Buchtel, Dean H. Dispenser. 3,784,058, Cl. 222-57.000.

Bucker, Franz, to Keller, C., u. Co. Drying trolleys for bricks and other articles. 3,783,800, Cl. 108-53.000.

Buckman Laboratories, Inc.: *See—*
Buckman, Stanley J.; Pera, John D.; Raths, Fred W.; and Mercer, Gerald D., 3,784,649.

Buckman, Stanley J.; Pera, John D.; Raths, Fred W.; and Mercer, Gerald D., to Buckman Laboratories, Inc. High molecular weight ionene polymeric compositions. 3,784,649, Cl. 260-874.000.

Buckman, Wayne T.; Miller, Blaine Monroe; and Lewis, Thomas Robert, to Wascon Systems, Incorporated. Pulping system with jet assist for pulper discharge. 3,784,116, Cl. 241-46.170.

Budrose, Charles R., to Bio-Dynamics, Inc. Universal recording card. 3,784,763, Cl. 179-100.2md.
Buechner, Oskar: *See—*
Pfannmueller, Helmut; Urban, Friedrich; Buechner, Oskar; Gropper, Hans; and Sistig, Wolf, 3,784,538.
Bullard, Herbert L.: *See—*
Osborn, Robert A.; St. Cyr, David R.; and Bullard, Herbert L., 3,784,530.
Bunker Ramo Corporation: *See—*
Bruckner, Richard, 3,784,960.
Hilbert, Wolfgang Herman Gustav, 3,784,233.
Bunker-Ramo Corporation, The: *See—*
Johnston, Samuel A.; Lyons, John G.; and Riedmayer, Henry J., 3,784,948.
Bunn, Dorrance P., Jr.: *See—*
Reynolds, David L.; Youngblood, Douglas J.; Bunn, Dorrance P., Jr.; and Pratt, Roy E., 3,784,463.
Bunn, Dorrance P., Jr.; and Jones, Henry E., to Texaco Inc. Fluid catalytic cracking. 3,784,360, Cl. 23-288.00s.
Buntrock, Robert Edward: *See—*
Cebalo, Tony; and Buntrock, Robert Edward, 3,784,555.
Burgdorf, Jochen, to ITT Industries, Inc. Self-adjusting device for brakes. 3,783,981, Cl. 188-106.00f.
Burger, Jacobus J.: *See—*
Krijger, Willem; and Burger, Jacobus J., 3,784,115.
Burgett, James F.; Vanderberg, Lawrence J.; and Woodward, Gary F., to Ford Motor Company. Liquid level magnetic gauge circuitry. 3,784,973, Cl. 340-59.000.
Burke Concrete Accessories, Inc.: *See—*
Collier, Thomas G., Jr., 3,784,313.
Steffan, William J., 3,783,462.
Burke, George E., Jr.; Lemos, Walter G.; and Shippee, Dennis M., to Textron, Inc. Portable pneumatic fastener driving device with improved actuating mechanism. 3,784,077, Cl. 227-8.000.
Burlington Industries, Inc.: *See—*
Griffin, Thomas Franklin, 3,784,427.
Burmeister, William W., to Sperry Rand Corporation. Multiaxes two cycle gimbal error corrector. 3,784,891, Cl. 318-633.000.
Burnham, Donald; Honeyball, Samuel Walter; Spooner, Michael; and Lobb, Daniel Richard, to Redifon Limited. Ground-based flight simulating apparatus. 3,784,742, Cl. 178-7.880.
Burroughs Wellcome: *See—*
Walls, Leslie Percy, 3,784,582.
Burstein, Albert H.; and Allen, William C., to Sampson Corporation, The. Intramedullary rod. 3,783,860, Cl. 128-92.0bc.
Busheev, Anatoly Ivanovich: *See—*
Manyafov, Valery Nikolaevich; Busheev, Anatoly Ivanovich; Semenov, Roman Lvovich; and Klevtsov, Valery Alexeevich, 3,784,866.
Bushnell, Clifford B.; Sheffer, Edward J.; and Sutliff, Robert C., to Eastman Kodak Company. Anticlockspring connector. 3,784,001, Cl. 206-52.00f.
Buss A.G.: *See—*
Wisz, Edward, 3,783,936.
Butler, Claude D.: *See—*
Krehbiel, Delmar D.; and Butler, Claude D., 3,784,572.
Butler, Walter J.: *See—*
Kurz, Bruno; Barron, Mark B.; and Butler, Walter J., 3,784,847.
Buttermist, Inc.: *See—*
Hautly, Harry B.; and Echols, Samuel T., Jr., 3,783,820.
Buzzolini, Mario G., to Sandoz, Inc. 1-p-(ω-Aminoalkoxy)phenyl-4,4-diaryl-cyclohexanes, cyclohexenes and cyclohexandienes and the salts and N-oxides thereof. 3,784,604, Cl. 260-870.00r.
Byrd, Lucid L., to Carter Precision Electric Company. Modular jack panel. 3,784,962, Cl. 339-121.000.
Byrne, William J.: *See—*
McGahon, John O.; and Byrne, William J., 3,783,991.
Byrnes, Eugene B.: *See—*
Arnold, Thomas B.; Byrnes, Eugene B.; and Castoe, Alonzo R., 3,784,466.
Bystrom, Andrew G. C.; and Bystrom, Mikeal G. Fishing rod holder. 3,783,547, Cl. 43-21.200.
Bystrom, Mikeal G.: *See—*
Bystrom, Andrew G. C.; and Bystrom, Mikeal G., 3,783,547.
Calhoun, Fredrick L., to Industrial Dynamics Company, Ltd. Container inspection system and method. 3,784,827, Cl. 250-498.000.
Calvert, Williard R., Sr. Heat and mass flow forced circulation electric air heater. 3,784,786, Cl. 219-368.000.
Cambridge, Ronan M.; and Chytil, Milan, to Bell Canada-Northern Electric Research, Limited. Long-line telephone circuit. 3,784,755, Cl. 179-16.00f.
Cambridge Scientific Instruments Limited: *See—*
Cuthbert, John; and Stow, James Albert, 3,784,938.
Caming, Lionel P.; and Fromwiller, Frank J., to Imperial Damper Co., Inc. Damper assembly. 3,783,768, Cl. 98-110.000.
Campbell, John J.; and Hart, Cullen P., to Caterpillar Tractor Company. Steering system for vehicles. 3,783,966, Cl. 180-79.20r.
Canada Cities Service, Ltd.: *See—*
Kaminsky, Victor Paul, 3,784,464.
Canavan, Thomas E. Off-road vehicle. 3,783,958, Cl. 180-5.00r.
Canon Kabushiki Kaisha: *See—*
Hirata, Noritsugu; and Takigawa, Tomishi, 3,784,291.
Ito, Yoshio; Katayama, Hajime; Nitanda, Hiroshi; and Yamaguchi, Masaru, 3,784,297.
Kanayama, Mitsutoshi; and Toda, Takao, 3,784,298.
Canron Limited: *See—*
Davies, Harry John, 3,784,416.
Cantamessa, Lorenzo. Spacing member for wire groups in electrical overhead lines. 3,784,723, Cl. 174-42.000.
Cantwell, Hugh Francis, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Fluidic pressure ratio control. 3,783,903, Cl. 137-805.000.
Capdeboscq, Andre: *See—*
de Chassy, Christian; and Capdeboscq, Andre, 3,783,816.
Capewell Manufacturing Company: *See—*
Bittern, Joseph E., 3,784,316.
Capital Cubicle, Inc.: *See—*
Lawrie, Raymond William, 3,784,145.
Caplan, Stanley J., to Accralube Company. Anti-corrosion lubricating compound. 3,784,472, Cl. 252-25.000.
Caputo, James P.; and Weber, Fred A., to GTE Automatic Electric Laboratories, Incorporated. Data handling system error and fault detecting and discriminating maintenance arrangement. 3,784,801, Cl. 235-153.0ak.
Carborundum Company, The: *See—*
Economy, James; Cottis, Steve G.; and Nowak, Bernard E., 3,784,405.
Carlberg, Edwin W., 50% to Simpson, Dale O. and Secure money changing and money receiving system. . 3,783,884, Cl. 133-1.00r.
Carlson, Charles J.: *See—*
Farmer, Donald J.; Carlson, Charles J.; and Muschong, Peter W., 3,784,733.
Carlson, Henry B. Septic tank construction. 3,784,012, Cl. 210-170.000.
Carrier Corporation: *See—*
Miller, Charlie D., 3,783,721.
Carter, J. Warne; and Meher, Martin Duane. Sealed, filament-wound plastic sleeve. 3,784,239, Cl. 285-293.000.
Carter Precision Electric Company: *See—*
Byrd, Lucid L., 3,784,962.
CArter, William A.: *See—*
Sievert, William C.; CArter, William A.; and Munson, James L., 3,783,823.
Carter, William C.; and Wadia, Aspi B., to International Business Machines Corporation. Self-testing checking circuit. 3,784,977, Cl. 340-146.1ab.
Casapopol, Gherasim; and Iaru, Napoleon, to Intreprinderea Judetana de Morarit si Panificatie. Apparatus for washing packing cases. 3,783,560, Cl. 51-5.000.
Case Westen Reserve University: *See—*
Mihaldi, Floro D., 3,784,820.
Caserta, Richard T.; and Ellendman, Merrill, to Red Hill Grinding Wheel Corporation. Organic-bonded abrasive containing octachloronaphthalene filler. 3,784,365, Cl. 51-298.000.
Cash, William D., to Ciba-Geigy Corporation. Production of an hypotensive effect with esters of gallic acid. 3,784,695, Cl. 424-308.000.
Cassella, Vincent Joseph, Jr., to Pennwalt Corporation. Method of preparing dry-cleanable soil-resistant leathers. 3,784,400, Cl. 117-62.200.
Castoe, Alonzo R.: *See—*
Arnold, Thomas B.; Byrnes, Eugene B.; and Castoe, Alonzo R., 3,784,466.
Castro, Rodolfo; Toscano, Esteban J.; and Siosca, Felix Jerome, to Hughes Aircraft Company. Holding and smoke removal system for a laser cutter. 3,784,183, Cl. 269-20.000.
Cata, Nicolas G. Prefected case. 3,784,046, Cl. 220-35.000.
Caterpillar Tractor Company: *See—*
Campbell, John J.; and Hart, Cullen P., 3,783,966.
Cathcart, Wilson Stewart, to Du Pont de Nemours, E. I., and Company. Process for treating sodium bisulfate. 3,784,673, Cl. 423-203.000.
Cavanaugh, Robert E., Jr., to Amchem Products, Inc. Method for protecting painted workpieces in a bake oven. 3,784,404, Cl. 117-97.000.
Cave, Gordon Milford, to Coplastix Limited. Fluid-flow control valves and sealing means therefor. 3,784,158, Cl. 251-327.000.
Cavitt, Stanley Bruce, to Jefferson Chemical Company, Inc. Hydrocarbon soluble phosphorus-modified molybdenum catalysts. 3,784,482, Cl. 252-431.00p.
Cebalo, Tony; and Buntrock, Robert Edward, to Air Products and Chemicals, Inc. Certain oxadiazolyl and thiadiazolyl amidines. 3,784,555, Cl. 260-306.80d.
Cekoric, Thomas, Jr.; and Yananton, Patrick Michael, to Hoffmann-La Roche Inc. Diagnostic device. 3,784,448, Cl. 195-139.000.
Celanese Corporation: *See—*
Braunstein, David M., 3,784,507.
Schaul, Jerome Sandel; Wissbrun, Kurt Falke; and Hannon, Martin John, 3,784,661.
Cennerelli, Giuseppe. Centering block for positioning reinforcement iron pieces. 3,783,574, Cl. 52-687.000.
Central Moloney Inc.: *See—*
Farmer, Donald J.; Carlson, Charles J.; and Muschong, Peter W., 3,784,733.
Centre d'Etudes Techniques des Industries de l'Habillement: *See—*
Guichard, Jean, 3,783,805.
Ceramic Kagaku Yugen Kaisha: *See—*
Shiio, Hajime; and Yamaguchi, Masami, 3,784,407.

Cescon, Lawrence Anthony, to Du Pont de Nemours, E. I., and Company. Phototropic 2,4,5-triphenylimidazolyl radicals and dimers thereof. 3,784,557, Cl. 260-309.000.

Ceska, Gary W., to Sinclair-Koppers Company. Process for preparing low emulsifier synthetic latex. 3,784,498, Cl. 260-29.6ta.

Cevera, James C. Proportioning pump. 3,784,335, Cl. 417-539.000.

Chafetz, Harry: *See—*
Siegart, William R.; Blackley, William D.; and Chafetz, Harry, 3,784,362.

Chafetz, Harry; Cullen, William P.; and Miller, Edward F., to Texaco Inc. Method for treating nitrogen-containing polymeric dispersants. 3,784,645, Cl. 260-583.00p.

Chalfin, Gregory T., to Aerojet-General Corporation. Metal detection system. 3,784,899, Cl. 356-5.000.

Chambers, Thomas G., to Goodyear Tire & Rubber Company, The. Adhesive composition containing an A-B-A block copolymer, poly alpha-methyl styrene and a tackifying resin. 3,784,587, Cl. 260-876.00b.

Chance, A. B., Company: *See—*
Davis, John P.; Harmon, Robert W.; and Woom, James T., 3,784,729.
Haubein, Harold Denis, 3,784,727.

Chance, Glenn G.; Crews, Sam T.; and Wilson, Clenis E., to Smith International, Inc. Intermediate drill stem. 3,784,238, Cl. 285-286.000.

Chandler Evans Inc.: *See—*
Lagana, Joseph A.; and Cygnor, John E., 3,784,326.

Chang, Kern Ko Nan; Prager, Hans John; and Weisbrod, Sherman, to RCA Corporation. Broadband apparatus using high efficiency avalanche diodes operative in the anomalous mode. 3,784,925, Cl. 330-34.000.

Chang, Shao-Yuen S., to General Electric Company. Process for boron containing glasses useful with semiconductor devices. 3,784,424, Cl. 156-15.000.

Channell, Glenn L.; Fuller, Blaine W.; and Davisson, Kenneth R., to Hydraulics Unlimited Mfg. Co. Scissor hoist. 3,784,162, Cl. 254-124.000.

Chao, Kwei C.: *See—*
Akin, Cavit; and Chao, Kwei C., 3,784,536.

Chapman, Charles C., to Phillips Petroleum Company. Removing alkyl fluoride with HF acid from an alkylation hydrocarbon effluent. 3,784,628, Cl. 260-683.420.

Chapurin, Gennady Alexandrovich. Flameless gas catalytic heater. 3,784,353, Cl. 431-329.000.

Charbonnages de France: *See—*
Chiche, Pierre, 3,784,679.

Charmoli, Arthur J.: *See—*
Knutson, Orlie E.; Gernandt, Louis E.; and Charmoli, Arthur J., 3,783,577.

Chartet, Andre, to Societe Anonyme des Usines Chaussen. Distributing device and heat exchanger embodying the same. 3,783,938, Cl. 165-166.000.

Chemische Fabrik Budenheim: *See—*
Beltz, Klaus; Frankenfeld, Klaus; and Gotzmann, Karl, 3,784,678.

Chesapeake and Ohio Railway Company, The: *See—*
Christian, Frank Gordon, Jr., 3,783,798.

Chevron Research Company: *See—*
Brown, Stuart; and Lowe, Warren, 3,784,474.
Graul, John Michael, 3,784,967.
Hughes, Thomas R., 3,784,622.

Chicago Bridge & Iron Company: *See—*
Reich, Robert Frederick, 3,783,628.
Simpson, Arthur R.; and Egloff, Frank S., 3,783,918.

Chiche, Pierre, to Charbonnages de France. Process for producing carbon fibres. 3,784,679, Cl. 423-447.000.

Chierici, Osvaldo F., to Holland Company. Air hose support for cushion cars. 3,784,030, Cl. 213-76.000.

Child, Ralph Grassing: *See—*
Cohen, Elliott; Sloboda, Adolph Edward; Osterberg, Arnold Curtis; and Child, Ralph Grassing, 3,784,704.
Tomcufcik, Andrew Stephen; Child, Ralph Grassing; and Sloboda, Adolph Edward, 3,784,701.

Chisso Corporation: *See—*
Hino, Horoyuki; Asakuno, Hiroyoshi; and Yamada, Tetsuya, 3,784,662.

Chmela, John F. Mesh target and dart capturable therein. 3,784,199, Cl. 273-95.00r.

Christian, Frank Gordon, Jr., to Chesapeake and Ohio Railway Company, The and Baltimore and Ohio Railroad Company, The. Railroad car for hauling flat stacks of material. 3,783,798, Cl. 105-369.00a.

Christianson, Raymond A., to Under Sea Industries, Inc. Balanced regulator second stage. 3,783,891, Cl. 137-491.000.

Christopher, Todd J., to RCA Corporation. Television deflection circuit with low power requirement. 3,784,857, Cl. 315-27.0td.

Chubb Industries, Limited: *See—*
Markham, Michael H., 3,784,090.

Chun, Alexander Hing Chinn: *See—*
Prillig, Elliott Benjamin; and Chun, Alexander Hing Chinn, 3,784,683.

Chupp, John P.; and Tung, Ching C., to Monsanto Company. (1-Alken-1-yl)-amino-s-triazines. 3,784,544, Cl. 260-249.800.

Chute, Richard, to Eaton Corporation. Safety apparatus. 3,784,222, Cl. 280-150.0ab.

Chytil, Milan: *See—*
Cambridge, Ronan M.; and Chytil, Milan, 3,784,755.

Ciani, John B.; and Luthy, Richard G., to United States of America, Navy. Underwater angle measuring device. 3,783,524, Cl. 33-285.000.

Ciba Corporation: *See—*
Julian, Percy L.; Hirsch, Arnold; and Iseli, Ernst, 3,784,598.

Ciba Limited: *See—*
Weber, Hans-Peter; Litzler, Alfred; Hertig, Jean; Milicevic, Branimir; Fuhring, Heinrich; Sieber, Johannes-Helmut; and 042818, 3,783,650.

Ciba-Geigy AG: *See—*
Desai, Nalin Binduprasad; Jayaraman, Ponnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, 3,784,559.
Fleming, George Latto; and Martin, Richard John, 3,784,647.
Garnish, Edward William; and Hayes, Barry James, 3,784,433.
Kirchmayr, Rudolf; Heller, Hansjorg; and Rody, Jean, 3,784,569.
Miles, Peter, 3,784,588.
Peter, Richard; and Jenny, Walter, 3,784,558.

Ciba-Geigy Corporation: *See—*
Baumann, Dieter; and Habermeier, Juergen, 3,784,525.
Cash, William D., 3,784,695.
Fitzi, Konrad; and Pfister, Rudolf, 3,784,691.
Frel, Jorg; Morel, Charles J.; and Wacker, Oskar, 3,784,602.
Gagneux, Vandre; Heckendorn, Roland; and Meier, Rene, 3,784,556.
Gatzi, Karl, 3,784,690.
Gubler, Kurt, 3,784,696.
Ilvespaa, Atso, 3,784,543.
Kartschmaroff, Peter; Moser, Paul; and Berger, Kurt, 3,784,510.
Model, Ernst; and Bindler, Jakob, 3,784,694.
Model, Ernst; and Dindler, Jakob, 3,784,698.
Renner, Alfred; and Seiz, Wolfgang, 3,784,584.
Schindler, Walter; Schmid, Erich; and Zuest, Armin, 3,784,689.
Sturm, Elmar; and Vogel, Christian, 3,784,368.

Ciba-Geigy Marienberg GmbH: *See—*
Eggenspepger, Heinz; Franzen, Volker; and Stephan, Hans, 3,784,650.

Cichowski, Robert S., to Phillips Petroleum Company. Cobalt, iron, phosphorus and oxygen containing oxidative dehydrogenation catalyst. 3,784,483, Cl. 252-437.000.

Cilberti, Frank Leonard, Jr., to Mallory, P. R., & Co., Inc. Electric cell battery with plastic webbing spacer for fast and complete epoxy encapsulation. 3,784,411, Cl. 136-87.000.

Cina, Saverio J.: *See—*
Blurton, Leon C.; and Cina, Saverio J., 3,783,627.

Cinnasi, Alexxandro; and Rescalli, Carlo, to Snam Progetti, S.p.A. Process for the separation of conjugated diolefins from mixtures containing them. 3,784,626, Cl. 260-681.50r.

Cities Service Company: *See—*
Dotson, Anderson O., Jr.; Newcombe, Jack; and Wolford, Lionel T., 3,784,509.
Zimmerman, Stanley D.; and McCoy, Paul O., 3,784,531.

Cities Service Oil Company: *See—*
Drake, Harry N., Jr., 3,784,358.
Marcellis, Alphanso W.; and Kerschner, Paul M., 3,784,473.

Cities Service Research & Development Company: *See—*
Frick, George W., 3,784,462.

Citizen Watch Co., Ltd.: *See—*
Yasuda, Tetuya, 3,783,605.

Citizen Watch Company Limited: *See—*
Tanaka, Kazuo, 3,783,599.

Claghorn, Frederic S.: *See—*
Kenworthy, Samuel P.; and Hall, Marcus A., 3,784,119.

Clark, Kenneth M., to Duetsch-Company Electronic Components Division, The. Contact for electrical connector. 3,784,966, Cl. 339-276.00t.

Claus, Gunter; and Doring, Friedrich, to Krupp Huttenwerke AG. Switch for rail vehicles. 3,784,134, Cl. 246-446.000.

Cleavinger, Richard L.: *See—*
Bancroft, James R.; Cleavinger, Richard L.; and Hall, James M., 3,784,829.

Clements, Alwin Spencer: *See—*
Metcalfe, Kenneth A.; and Clements, Alwin Spencer, 3,784,398.

Cleveland Trencher Company, The: *See—*
Penote, Vincent S.; and Rear Melvin K., 3,783,537.

Clevepak Corporation: *See—*
Stump, Paul W.; Huber, James A.; and Lipinski, John M., 3,783,908.

Clody, Donald E.: *See—*
Beer, Bernard; Clody, Donald E.; Vogel, John R.; and Horovitz, Zola P., 3,784,688.

Coach and Car Equipment Corporation: *See—*
Harder, Arthur J., Jr., 3,784,147.

Coal Industry (Patents), Limited: *See—*
Hoy, Herbert Raymond; Johnson, Ronald Leslie; and Battcock, Whalley Vowe, 3,784,108.

Coanda, Henry; Aldea, Gheorghe; Bodea, Ion; Truica, Vasile; Hanciulescu, Valentin; Posirca, Radu; Lazar, Cristian; and Gabor, Iacob, to Institutul de Cercetare si Proiectare Tehnologica Pentru Industria Extractiva de Titei si Gaza. Method of and apparatus or the gas-light withdrawal of a liquid from a subterranean space. 3,784,325, Cl. 417-163.000.

Coates, Vincent J.; and Welter, Leonard M., to American Optical Corporation. Low voltage field emission scanning electron microscope. 3,784,815, Cl. 250-307.000.

Cocks, Franklin H.; and Bates, Herbert E., to Tyco Laboratories, Inc. Improvements in and morintings for radiation detecting devices. 3,784,860, Cl. 313-93.000.

Codrino, Giuseppe. Control unit for lights, direction indicators, and windshield wiper. 3,784,770, Cl. 200-61.360.

Coffman, Rudleigh G. Coaxial connector with integral switched terminating resistor. 3,784,950, Cl. 338-200.000.

Cohen, Elliott; Sloboda, Adolph Edward; Osterberg, Arnold Curtis; and Child, Ralph Grassing, to American Cyanamid Company. Compositions of 4-biphenyl acetic acid and method of use. 3,784,704, Cl. 424-317.000.

Coleman, Bernard: *See—*
Krick, John B.; and Coleman, Bernard, 3,784,846.

Coleman, Charles M. Automatic volume control pipet. 3,783,696, Cl. 73-425.40p.

Colgate-Palmolive Company: *See—*
Douglas, Livingston C., 3,784,040.
Suh, John T.; and Skorcz, Joseph A., 3,784,643.

Colin, Dennis P.: *See—*
Pearlman, Alan R.; and Colin, Dennis P., 3,784,935.

Colinet, Rene D. High ratio frictionless speed reductor. 3,783,712, Cl. 74-805.000.

Collier, Thomas G., Jr., to Burke Concrete Accessories, Inc. Means for attaching a key-joint forming strip to a support stake. 3,784,313, Cl. 404-51.000.

Collignon, Jean. Nozzle. 3,784,112, Cl. 239-443.000.

Collins, Lloyd O.: *See—*
Edge, Billy J.; and Collins, Lloyd O., 3,783,939.

Collins, Thomas Robert Stephen: *See—*
Garner, Paul Johnson; and Collins, Thomas Robert Stephen, 3,784,152.

Collision Devices, Inc.: *See—*
Sobel, Leonard H., 3,784,182.

Colman, John M.: *See—*
Sauer, Harold S.; Hagopian, Nubar D.; and Colman, John M., 3,783,859.

Colten, Frank P.; and Kaplan, Morton, to General Foods Corporation. Moisture barrier coating composition. 3,784,713, Cl. 426-171.000.

Columb, Henry Octave, Jr.; and Trecker, David John, to Union Carbide Corporation. N-(5-norbornen-2-ylmethyl) carbamate of cellulose acetate. 3,784,492, Cl. 260-13.00r.

Columbia Broadcasting System, Inc.: *See—*
Bauer, Benjamin B., 3,784,744.

Commercial Shearing, Inc.: *See—*
Gray, Basil P., 3,784,522.

Commissariat a l'Energie Atomique: *See—*
Kostic, Svetislav; and Le Meur, Roger, 3,784,823.

Commissariat a l'Energie Atomiqut exchangers in nuclear reactors: *See—*
Vergasson, Michel, 3,784,443.

Commissariat a l'Energy Atomique: *See—*
Arlaud, Jean-Claude, 3,783,691.

Commonwealth of Australia, The; care of the Secretary, Department of Supply: *See—*
Metcalfe, Kenneth A.; and Clements, Alwin Spencer, 3,784,398.

Compagnie des Compteurs: *See—*
Brelot, Rene; and Tourret, Jean, 3,784,309.

Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie: *See—*
Boileau, Jacques, 3,783,925.
De Zarauz, Yves Jacques, 3,783,926.
Verdier, Henri, 3,783,927.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Oswald, Jacques; and Rainsard, Yves, 3,784,915.

Compagnie Industrielle Radioelectrique: *See—*
Kohler, Hans Karl; and Trachsel, Fred W., 3,784,253.

Compare, Giampiero, to Honeywell Information Systems Italia. Method for manufacturing artwork for printed circuit boards. 3,784,380, Cl. 96-44.000.

Compo Industries Inc.: *See—*
Von Schoppe, Bertram A., 3,783,463.

Compteurs-Schlumberger: *See—*
Jacquemard, Raymond, 3,783,896.

Computer Identics Corporation: *See—*
Ruhro, Richard H., 3,784,795.

Connor, David T.: *See—*
Strandtmann, Max Von; Connor, David T.; and Shavel, John, Jr., 3,784,600.

Consolidated Foods Corporation; d/b/a Popsicle Industries: *See—*
Arden, Sidney, 3,784,715.

Consolidation Coal Company: *See—*
May, Francis A., 3,783,487.
Petry, Eston, 3,784,126.

Construction Specialties Inc.: *See—*
McGeary, Frank L.; and Zampetti, Patrick L., 3,783,471.

Container Company of New York: *See—*
Gilbert, Jack A.; and Franklyn, Stanley, 3,784,430.

Continental Oil Company: *See—*
Krehbiel, Delmar D.; and Butler, Claude D., 3,784,572.
Motz, Kaye L., 3,784,623.

Controle Bailey (Societe Anonyme): *See—*
De Livois, Guy Baudelet, 3,783,684.

Controls Company of America: *See—*
Ostrowski, Edwin A.; and De Lew, Charles A., 3,784,154.

Cook, Charles W., to Ball Corporation. Apparatus for positioning articles. 3,783,992, Cl. 198-33.0ab.

Cook, Henry A.: *See—*
Strong, Herbert W.; Radway, Jerrold E.; and Cook, Henry A., 3,784,680.

Cook, John F., to Telectron, Inc. Door control system providing automatic delayed door reversal. 3,783,556, Cl. 49-25.000.

Cooley, William C. Pulsed liquid jet device. 3,784,103, Cl. 239-101.000.

Cooper, Alfred. Safety closure cap. 3,784,047, Cl. 220-40.00r.

Cooper, Brian Frederick, to English Electric Valve Company, Limited. Devices incorporating cavity resonators. 3,784,849, Cl. 310-8.200.

Copland, George V., to Halliburton Company. Pipeline inspection system. 3,784,740, Cl. 178-6.800.

Coplastix Limited: *See—*
Cave, Gordon Milford, 3,784,158.

Corbin, Marcel Pierre Ernest Marie: *See—*
Kuhn, Karl Walter; and Corbin, Marcel Pierre Ernest Marie, 3,783,842.

Corley, William P.: *See—*
Eddens, Fletcher C.; Corley, William P.; Salling, Jack Ronald; and McDonald, Ralph E., 3,784,137.

Cornford, Arthur Selwyn. Journal bearing. 3,784,265, Cl. 308-73.000.

Corning Glass Works: *See—*
Araujo, Roger J.; and Sawchuk, Loris G., 3,784,386.

Cote, Raymond A.: *See—*
Shea, John V.; and Cote, Raymond A., 3,784,088.

Cottis, Steve G.: *See—*
Economy, James; Cottis, Steve G.; and Nowak, Bernard E., 3,784,405.

Counsell, Raymond, to University of Michigan, The Regents of the. Halogenated cholesterol. 3,784,576, Cl. 260-397.200.

Court, Patrick R. J., to Garrity, Paul G. Lighter and fuel reservoir. 3,784,352, Cl. 431-277.000.

Courtaulds Limited: *See—*
Willats, Donald James; and Morgan, Peter Ernest, 3,784,428.

Covill, Dennis H., to Nautical Electronic Laboratories Limited. Four port combiner utilizing single transformer. 3,784,931, Cl. 333-6.000.

Cowell, David, to Sybron Corporation. RF power transistor secondary breakdown protection circuit. 3,784,877, Cl. 317-33.00r.

Craig, William Allan, to Imperial Chemical Industries Limited. Slurry explosives cross-linked with a compound of tellurium VI. 3,784,421, Cl. 149-29.000.

Cranch, John F.: *See—*
Hudson, Frederick W.; and Cranch, John F., 3,784,300.

Crandall, Walter E.; and Curtis, Orlie L., Jr., to Northrop Corporation. High speed deflection modulator electron beam signal processor. 3,784,799, Cl. 325-130.000.

Crane, Robert Anthony, to RCA Limited. Gas discharge device and electrode for use therein. 3,784,928, Cl. 331-94.500.

Crawford, Allan H., to Mohasco Industries, Inc. Printing apparatus. 3,783,654, Cl. 68-200.000.

Crawford, Roy P., to International Business Machines Corporation. Sheet removing apparatus. 3,784,190, Cl. 271-80.000.

Crawley, Alan Arthur, to Lucas Aerospace Limited. Fuel supply arrangements for gas turbine engines. 3,784,329, Cl. 417-252.000.

Creusot-Laire: *See—*
Almand, Edouard, 3,784,374.

Crews, Sam T.: *See—*
Chance, Glenn G.; Crews, Sam T.; and Wilson, Clenis E., 3,784,238.

Critchley, John Edward: *See—*
Haight, William John; and Critchley, John Edward, 3,784,759.

Crockett, Joseph T.: *See—*
Hackbarth, Lowell E.; and Crockett, Joseph T., 3,784,442.

Crone, John M., Jr.: *See—*
Suggitt, Robert M.; Crone, John M., Jr.; and Arkell, Alfred, 3,784,617.
Suggitt, Robert M.; and Crone, John M., Jr., 3,784,618.

Crone, John M., Jr.; and Suggitt, Robert M., to Texaco Inc. Method of separating dicyclohexyl benzenes. 3,784,619, Cl. 260-668.00r.

Cross, Norton M., Jr., to Guyer, Reynolds W., Jr.; d/b/a Winsor Concepts. Board game apparatus. 3,784,205, Cl. 273-131.0ac.

Croston, David H.: *See—*
Kohler, John B.; and Croston, David H., 3,783,824.

Crouch, William B.: *See—*
Slater, William L.; Schlinger, Warren G.; and Crouch, William B., 3,784,364.

Crounse, Nathan N.: *See—*
Jefferies, Patrick J.; and Crounse, Nathan N., 3,784,599.

Crowell, Jack R.; Tomashek, James R.; and Ward, Donald H., to Borg-Warner Corporation. Method of controlling molten metal height in continuous casting. 3,783,932, Cl. 164-4.000.

Crown Metal Manufacturing Company: *See—*
Varon, Albert S.; and Siegal, Burton L., 3,784,023.

Crucible Inc.: *See—*
Ornitz, Martin N.; Moskowitz, Arthur; and Bressanelli, Jerome P., 3,784,373.

Culbertson, Townley P.; and Haskell, Theodore H., to Parke, Davis & Company. Polyamine compounds and methods for their production. 3,784,541, Cl. 260-210.00r.

Cullen, William P.: *See—*

Chafetz, Harry; Cullen, William P.; and Miller, Edward F., 3,784,645.

Cullom, John T. Repair facility for overhead crane. 3,783,792, Cl. 104-128.000.

Cunningham, M. E., Company: *See—*
Noble, Arthur J.; Speicher, Edwin W.; and Speicher, Walter J., 3,783,776.

Cunningham, Sinclair Upton, to National Research Development Corporation. Cam follower piston. 3,783,748, Cl. 92-249.000.

Cunningham, Sinclair Upton; and Wells, James Rutherford, to National Research Development Corporation. Cam follower piston. 3,783,749, Cl. 92-249.000.

Curran, Samuel Crowe. Pendulum switch assembly for clocks or the like with electromagnetic impulse means. 3,783,601, Cl. 58-30.000.

Curtis & Marble Machine Co.: *See—*
Maass, Edward Ralph, 3,784,913.

Curtis, Orlie L., Jr.: *See—*
Crandall, Walter E.; and Curtis, Orlie L., Jr., 3,784,799.

Curwood, Inc.: *See—*
Lamborn, Homer C., 3,783,671.

Cuthbert, John; and Stow, James Albert, to Cambridge Scientific Instruments Limited. Microwave spectroscopy. 3,784,938, Cl. 333-95.000.

Cutler-Hammer, Inc.: *See—*
Van Horn, Lawrence E.; Elliot, William H.; and Schuchmann, Russell P., 3,784,881.

Cygnor, John E.: *See—*
Lagana, Joseph A.; and Cygnor, John E., 3,784,326.

D. J. Incorporated: *See—*
Allen, Bobby H., 3,784,066.

Dahlstrom, Robert Victor; and Jaehnig, James Herbert, to Du Pont de Nemours, E. I., and Company. Culture medium and process for the biological production of alpha-omega-alkanedioic acid. 3,784,445, Cl. 195-28.00r.

Daimler-Benz Aktiengesellschaft: *See—*
Andres, Rudolf; Moller, Hermann; and Seyfried, Franz, 3,784,810.
Wilfert, Karl; and Gotz, Hans, 3,784,226.

Dainichi-Nippon Cables, Ltd.: *See—*
Maeda, Tsutomu; and Sato, Yoshikazu, 3,784,939.

Dales, Mark; and Whang, Jong Jai. Anion exchange resins from alkylated condensation polymers of polyethylene-imine and dihaloalkanes. 3,784,489, Cl. 260-2.10c.

Daly, John Patrick, to Scope Incorporated. Manually adjustable multiposition switch. 3,784,765, Cl. 200-5.00r.

Daniel, William H. Multi-unit apparatus for collecting oil from the surface of a body of water. 3,784,013, Cl. 210-242.000.

Danielson, Irvin R., to Thor Power Tool Company. Sound attenuating device for a work steel or the like. 3,783,970, Cl. 181-33.00a.

Darley, Henry C. H.; and Robinson, Joseph D., to Shell Oil Company. Method for reducing borehole signals in nuclear magnetic logging. 3,784,898, Cl. 324-.50r.

Dart Industries Inc., mesne: *See—*
Pierce, Joseph E., 3,783,581.

Das Khandelwal B.; and Strobelt, William E., to Boeing Company, The. Vacuum guage calibrator. 3,783,678, Cl. 73-42 000.

D'Ascoli, Ralph G.; and Alleva, Leon L., to Anaconda Company, The, mesne. Method for making electrical connector. 3,784,663, Cl. 264-230.000.

Data Time, Inc.: *See—*
Hunt, Theodore R., 3,784,768.

Dauben, Dwight L.; and Froning, H. R., to Amoco Production Company. Removing water from oil-producing formations. 3,783,945, Cl. 166-305.000.

Daugherty, James T.; and Baber, James J., Jr. Stump cutter. 3,783,914, Cl. 144-2.00n.

Davies, Harry John, to Canron Limited. Manufacture of white cast iron. 3,784,416, Cl. 148-3.000.

Davis, Donald Y., to General Electric Company. Variable diffuser centrifugal pump. 3,784,318, Cl. 415-158.000.

Davis, John P.; Harmon, Robert W.; and Woom, James T., to Chance, A. B., Company. Electrical cable connector. 3,784,729, Cl. 174-73.00r.

Davis, Leonard C., to General Motors Corporation. Squeeze film bearing support movement limiting apparatus. 3,784,267, Cl. 308-174.000.

Davis, Lon R. Coding means for photographic slide apparatus. 3,784,296, Cl. 353-120.000.

Davis, Richard C. Bullet-proof protective armor and method of making same. 3,783,449, Cl. 2-2.005.

Davison, George Robert, to Donkin, Bryan, Company Limited, The. Pivoted weight biased valve. 3,783,893, Cl. 137-527.800.

Davison, George Robert, to Donkin, Bryan, Company Limited, The. Non-return valves. 3,783,894, Cl. 137-535.000.

Davisson, Kenneth R.: *See—*
Channell, Glenn L.; Fuller, Blaine W.; and Davisson, Kenneth R., 3,784,162.

Dawidowicz, Jan; and Ferraro, Frank A., to Warner-Lambet Company. Method for dispensing razor blade cartridge. 3,783,493, Cl. 29-400.000.

Dawidowicz, Jan; and Ferraro, Frank A., to Warner-Lambert Company. Razor having tandemly mounted blades bonded in a disposable cartridge. 3,783,510, Cl. 30-32.00r.

Dawson, Robert Graham; and Sansome, Dennis Hugh, to National Research Development Corporation. Vibratory forming. 3,783,668, Cl. 72-283.000.

Dayco Corporation: *See—*
Duckett, John C.; Gaster, Ivan; and Ensley, Rufus Neal, 3,783,492.

Daynard, Richard E.: *See—*
Thaler, Sherwood S.; and Daynard, Richard E., 3,783,878.

de Chassy, Christian; and Capdeboscq, Andre, to Entreprise de Recherches et d'Activites Petrolieres (ELF). System for mooring ships to structures. 3,783,816, Cl. 114-230.000.

De Gioia, Peter A.; and Sutton, Charles B., to General Motors Corporation. Bearing seal. 3,784,268, Cl. 308-187.200.

De Lew, Charles A.: *See—*
Ostrowski, Edwin A.; and De Lew, Charles A., 3,784,154.

De Ligt, John, to Westvaco Corporation. Accordion, folding and cutting apparatus. 3,784,188, Cl. 270-79.000.

De Livois, Guy Baudelet, to Controle Bailey (Societe Anonyme). Fuel gas flow-meter corrector equipment for gases having variable characteristics. 3,783,684, Cl. 73-190.000.

De Torre, John, to Federal Pacific Electric Company. Circuit breaker with overcurrent and auxiliary releases. 3,784,940, Cl. 335-18.000.

De Wilde De Ligny, Johan Herman; De Wit, Cornelis Leendert; and Van Rooij, Petrus Johannes Cornelius, to U.S. Philips Corporation. Hot-gas piston engine. 3,783,612, Cl. 60-24.000.

De Wit, Cornelis Leendert: *See—*
De Wilde De Ligny, Johan Herman; De Wit, Cornelis Leendert; and Van Rooij, Petrus Johannes Cornelius, 3,783,612.

De Zarauz, Yves Jacques, to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie. Tire having two-ply carcass merging into one ply. 3,783,926, Cl. 152-356.000.

Dean, Harrison Martin. Stop gauges with handle mounted indicator and lockout means. 3,783,720, Cl. 82-34.00a.

DeBortoli, George; and Lukas, Helmut Hans, to Northern Electric Company Limited. Connecting block with hinged terminal means. 3,784,728, Cl. 174-60.000.

DeCenzo, Herbert A. Connector assembly for terminal junction system. 3,784,963, Cl. 339-198.0pt.

Decubber, Maurice: *See—*
Serafin, Marian; and Decubber, Maurice, 3,784,098.

Deep Oil Technology, Inc.: *See—*
Horton, Edward E., 3,784,959.

DeGaston, Alexis Neal, to McDonnell Douglas Corporation. Static decharger. 3,784,876, Cl. 317-2.00r.

Dehler, Bernard, to Metallwerk Max Brose & Co. Electric window operating mechanism. 3,783,702, Cl. 74-89.000.

Deitchler, Roy W.: *See—*
Nelson, William Junior; and Hinman, Charles William, 3,784,409.

DeLimon Fluhme & Co.: *See—*
Kurten, Fritz; and Saretzky, Horst, 3,783,973.

Denisenko, Alexandr Panteleevich: *See—*
Nekrasov, Konstantin Dmitrievich; Tarasova, Alexandra Petrovna; Bljusin, Alfred Avgustovich; Avdeeva, Tamara Petrovna; Elin, Vyacheslav Alexandrovich; Roizman, Pavel Aronovich; and Denisenko, Alexandr Panteleevich, 3,784,385.

Depenbrock, Manfred, to Brown, Boveri & Cie AG. Device for converting the electrical energy of a thermionic generator. 3,784,895, Cl. 322-2.00r.

Derrer, Carson E. Cable de-lashing tool. 3,783,495, Cl. 29-426.000.

Derry, Carl E. Sound barrier. 3,783,968, Cl. 181-33.00g.

Desai, Nalin Binduprasad; Jayaraman, Ponnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, to Ciba-Geigy AG. Styralyl dyestuffs. 3,784,559, Cl. 260-465.00d.

Detroit Gasket and Manufacturing Company: *See—*
Doerfling, Ralph G., 3,784,212.

Deutsche Gold- und Silber-Schneideanstalt vormals Roessler: *See—*
Kleemann, Axel; Schreyer, Gerd; Weiberg, Otto; and Weigert, Wolfgang, 3,784,568.

Deutsche Texaco Aktiengesellschaft: *See—*
Pirck, Dietrich; Fuchs, Gundolf; and Sachse, Gerhard, 3,784,528.

DeVos, Ferdinand Allard; and Ter Steege, Jan Hendrik, to N.V. Werkspoor. Apparatus for engraving a cylinder with repeated overlapping patterns. 3,784,739, Cl. 178-6.60b.

DeWitt, John H.; d/b/a Cezoma International: *See—*
Kenworthy, Samuel P.; and Hall, Marcus A., 3,784,119.

Diamond International Corporation: *See—*
Siciliano, Anthony J., 3,783,829.
Siciliano, Anthony J., 3,783,990.

Diebler, Herman G.: *See—*
Barton, Stephen R.; and Diebler, Herman G., 3,784,310.

Diehl, Francis L., to Procter & Gamble Company, The. Detergent compositions containing oxidized polysaccharide builders. 3,784,475, Cl. 252-89.000.

Diepers, Heinrich: *See—*
Martens, Hans; Diepers, Heinrich; and Muller, Alfred, 3,784,452.

Dills, Raymond L.: *See—*
Hurko, Bohdan; and Dills, Raymond L., 3,783,854.

Dills, Raymond L., to General Electric Company. Textured continuous cleaning surface for cooking ovens. 3,783,853, Cl. 126-19.00r.

Dilpers, Heinrich; and Musebeck, Horst, to Siemens Aktiengesellschaft. Method of producing a composite conductor band for use in making a tubular superconductor. 3,783,503, Cl. 29-599.000.

Dindler, Jakob: *See—*

Model, Ernst; and Dindler, Jakob, 3,784,698.
Dinger, Horst: *See*—
Ganter, Wolfgang; and Dinger, Horst, 3,783,600.
Ditto, Edwin D. Apparatus for friction welding. 3,784,080, Cl. 228-2.000.
Dix, Keith M.; and Bonbrake, Bert, Jr., to Fire Protection Company. Automatic sprinkler head. 3,783,947, Cl. 169-40.000.
Doan, Troy L. Bathing facility. 3,783,456, Cl. 4-149.000.
Dobbert, Arnold E., to Rheem Manufacturing Company. Gathering means for clippers. 3,783,583, Cl. 53-138.00a.
Dobras, Bruce W., to Monarch Marking Systems, Inc. Coded record and methods of and apparatus for encoding and decoding records. 3,784,792, Cl. 235-61.11e.
Dobson, Christopher D.; and Willmott, Kenneth Nash Knight. Planetary workholders. 3,783,821, Cl. 118-48.000.
Dodd, Vaal Ray. Method and apparatus for shaft alignment. 3,783,522, Cl. 33-181.00r.
Dodds, Dale I. Organic acid addition salts of 1-(butylcarbamoyl)-2-(methylamino)-benzimidazole and method for preparing the same. 3,784,571, Cl. 260-309.200.
Doerfling, Ralph G., to Detroit Gasket and Manufacturing Company. Composite gasket. 3,784,212, Cl. 277-22.000.
Dohmeier, Hans Otto. Protective chains. 3,783,923, Cl. 152-243.000.
Dominion Auto Accessories, Limited: *See*—
Brudy, Peter E., 3,784,149.
Domokos, Geza. Process of producing artificial lumber from untreated sawdust, a powdered urea-formaldehyde resin and water. 3,784,494, Cl. 260-17.300.
Donahue, Simeon J.: *See*—
Jankowski, Matthew A.; and Donahue, Simeon J., 3,784,949.
Donkin, Bryan, Company Limited, The: *See*—
Davison, George Robert, 3,783,893.
Davison, George Robert, 3,783,894.
Donnaker, Clarence W.: *See*—
Biddison, John M.; and Donnaker, Clarence W., 3,783,501.
Doran, E. James; and Berliner, Wallace H., to Waldes Kohinoor, Inc. Dual retaining ring device for facilitating the assembly of universal joints. 3,783,638, Cl. 64-17.00a.
Doring, Friedrich: *See*—
Claus, Gunter; and Doring, Friedrich, 3,784,134.
Dorman, Isidore, to Bell & Howell Company. Machine for forming and applying index tabs to file cards. 3,784,439, Cl. 156-518.000.
Dorman, Patrick Steven. Coin wrapping device. 3,783,586, Cl. 73-213.000.
Dorsey, Denis Peter, to RCA Corporation. Protection circuit. 3,784,870, Cl. 315-20.000.
Dotson, Anderson O., Jr.; Newcombe, Jack; and Wolford, Lionel T., to Cities Service Company. Fire retardant compositions. 3,784,509, Cl. 260-45.75b.
D'Ottavio, Eugene D.: *See*—
Grunwald, John J.; D'Ottavio, Eugene D.; Rhodenizer, Harold L.; and Lombardo, Michael S., 3,784,440.
Douglas, Livingston C., to Colgate-Palmolive Company. Container. 3,784,040, Cl. 215-31.000.
Dow Chemical Company, The: *See*—
Bangs, Leigh B.; Huml, James O.; and Layne, Gilbert S., 3,784,371.
Brown, James A., 3,784,417.
Gibbons, Carl L., 3,784,500.
Hickner, Richard A.; and Bredeweg, Corwin J., 3,784,607.
Jennings, Robert R.; and Thornton, William M., 3,783,944.
Kyriacou, Demetrios, 3,784,552.
Larsen, Eric R.; Andrejewski, Bernard R.; and Edamura, Fred Y., 3,784,608.
Larsen, Eric R.; McKendry, Lennon H.; and Edamura, Fred Y., 3,784,611.
Parth, William H., 3,784,359.
Smith, Harry A.; and Kobel, Erwin H., 3,784,496.
Steinhauer, Alfred F.; and McIntire, Otis R., 3,784,488.
Tomalia, Donald A.; and Thomas, Robert J., 3,784,508.
Dow Corning Corporation: *See*—
Keil, Joseph W., 3,784,479.
Downs, Thomas C.: *See*—
Sebring, John G.; and Downs, Thomas C., 3,784,337.
Dowty Fuel Systems, Limited: *See*—
Robinson, Keith, 3,784,130.
Drake, Harry N., Jr., to Cities Service Oil Company. Support for chromogenic glycol test reagent. 3,784,358, Cl. 23-253.0tp.
Drennan, George A.: *See*—
Smith, James M.; and Drennan, George A., 3,784,726.
Dresser Industries, Inc.: *See*—
Jackson, G. C., Jr., 3,784,264.
McGlothlin, Raymond E.; Werlein, Eugene R.; Taylor, Bruce F.; and Schultz, Roger Lee, 3,784,579.
Stewart, Kenneth James, 3,784,028.
Driscoll, Gerald Jon; and Wellborn, James Larkin, to Du Pont de Nemours, E. I., and Company. Drying apparatus with feed and humidity control. 3,783,527, Cl. 34-56.000.
Drostholm, Frede Hilmar: *See*—
Drostholm, Frede Hilmar; and Meyer, Leonard S. (said Meyer assor. to said), 3,784,667.
Drostholm, Frede Hilmar; and Meyer, Leonard S., said Meyer assor. to said Drostholm, Frede Hilmar. Method for manufacturing pipes. 3,784,667, Cl. 264-145.000.
Dryden Chemicals, Limited: *See*—
Giguere, Jacques; and Landry, Jean-Guy, 3,784,493.
Du Pont de Nemours, E. I., and Company: *See*—
Cathcart, Wilson Stewart, 3,784,673.
Cescon, Lawrence Anthony, 3,784,557.
Dahlstrom, Robert Victor; and Jaehnig, James Herbert, 3,784,445.
Driscoll, Gerald Jon; and Wellborn, James Larkin, 3,783,527.
Gramas, John Vincent, 3,784,378.
Grot, Walther Gustav, 3,784,399.
Hoeschele, Guenther Kurt, 3,784,520.
Kane, William P., 3,784,711.
Pettit, Paul H., Jr., 3,784,501.
Sheard, John Leo, 3,784,887.
Sprauer, Jerome William, 3,784,495.
Vasta, Joseph A., 3,784,506.
Waldkirch, Richard B., 3,783,596.
Du Rocher, Gideon A., to Essex International Inc. Relay construction. 3,784,941, Cl. 335-196.000.
Dual-Wide, Inc.: *See*—
Eysenring, Edward M., 3,783,562.
Dubois, Gerald; and Berthoud, Francois, to Ebauches S.A. Mehcanism for coupling and locking a rotatable member of a timepiece and of a small mechanism. 3,783,606, Cl. 58-74.000.
Ducellier & Cie: *See*—
Mabert, Roger Jean, 3,783,850.
Duckett, John C.; Gaster, Ivan; and Ensley, Rufus Neal, to Dayco Corporation. Tool for installing locking pin used to hold a die-cutting mat on a rotary anvil. 3,783,492, Cl. 29-278.000.
Dudragne, Raymond Andre. Wide-angle objective lens. 3,784,286, Cl. 350-220.000.
Dueringer, John Wilbur, to Textron, Inc. Deployable nozzle extension for rocket engines. 3,784,109, Cl. 239-265.10g.
Duetsch-Company Electronic Components Division, The: *See*—
Clark, Kenneth M., 3,784,966.
Duffner, Josef, to Bosch, Robert, G.m.b.H. Apparatus for firing ceramic sparkplug insulators. 3,783,489, Cl. 29-203.00p.
Dukette, William J., to American Associated Cybernetics, Inc. Relay memory circuit. 3,784,879, Cl. 317-136.000.
Dullinger, Karl, to Kronseder, Hermann. Apparatus for wrapping bottle necks. 3,784,438, Cl. 156-487.000.
Dumit, Josepy P., to Atco Corporation. Shelf support leg lock bracket. 3,784,025, Cl. 211-148.000.
Dunbar, Glenn G. Vehicle mounted loading hoist. 3,784,035, Cl. 214-75.00h.
Duncan, David M.; and Johnson, Joseph H. Transistor package. 3,784,883, Cl. 317-234.00r.
Dunham-Bush, Inc.: *See*—
Perez, John L., 3,783,635.
Dunlop Limited: *See*—
Lawson, Neil, 3,783,704.
Dunn, R. S.; and Rife, William J. Roof lock assembly with eave structure. 3,783,564, Cl. 52-96.000.
Dupree, Inc.: *See*—
Dupree, James N., 3,784,867.
Dupree, James N., to Dupree, Inc. Lamp. 3,784,867, Cl. 313-318.000.
DuPuis, Emanuel F. Folding two-level table, bench or the like. 3,783,799, Cl. 108-19.000.
Durden, John A.; and Souse, Anthony A., to Union Carbide Corporation. 2-(Polysubstituted phenyl)-1,3-indandione compounds. 3,784,605, Cl. 260-590.000.
Dursch, Friedrich, to Squibb, E. R., & Sons, Inc. Methylacetoacetic ester enamine of D-2-(1,4-cyclohexadien-1-yl)glycine, sodium salt-dimethylformamide adduct. 3,784,562, Cl. 260-468.00j.
Durst, Felix Ernst. Tamping machine for setting floor covering tiles. 3,784,314, Cl. 404-117.000.
Duval, Bruce, to T. P. I. Limited. Training devices. 3,783,530, Cl. 35-11.000.
DuVall, Dale Rodney: *See*—
Borowski, Chester Joseph, Jr.; and DuVall, Dale Rodney, 3,784,981.
Duwel, Dieter: *See*—
Schorr, Manfred; and Duwel, Dieter, 3,784,633.
Dworkin, Howard J.; and Gutkowski, Robert F. Process and apparatus for making radioactive labeled protein material. 3,784,453, Cl. 204-131.000.
Dye, John F., to Kendall Company, The. Tabbed eccentric locking device. 3,783,876, Cl. 128-347.000.
Dymo Industries, Inc.: *See*—
Hemgren, Sven Anders, 3,783,543.
Dynamic Technology Limited: *See*—
Barrett, James Howard; and Kelleher, Jack, 3,784,874.
Dynamit Nobel Aktiengesellschaft: *See*—
Vogt, Wilhem; and Richtzenhain, Herman, 3,784,612.
Wissinger, Waldemar; Kurth, Josef; and Gauchel, Peter, 3,784,345.
Earle, Roland D.; and Baum, Morton S. Ready-to-use batter product. 3,784,710, Cl. 426-128.000.
Eason, Ronald Charles: *See*—
Baker, David Keith; Eason, Ronald Charles; Gascoigne, Richard Melville; and Schryver, Andrew, 3,784,875.
Eastern Company, The: *See*—
Pastva, John V., Jr., 3,784,243.
Eastman Kodak Company: *See*—
Bushnell, Clifford B.; Sheffer, Edward J.; and Sutliff, Robert C., 3,784,001.

Fox, Charles J., 3,784,376.
Gilman, Paul B., Jr.; and Kaukeinen, Joseph Y., 3,784,375.
Liang, Kai, 3,784,382.
Owen, Willaim S., Jr., 3,784,135.
Perignon, Philippe, 3,784,381.

Eaton Corporation: *See—*
Benkovic, Roger J., 3,783,744.
Bojas, Edward J., 3,783,611.
Chute, Richard, 3,784,222.
Hass, David P.; and Kunz, John E., 3,784,223.
Petrus, Stephen, 3,783,922.

Eaton Corporation, mesne: *See—*
Pease, Logan L., 3,784,791.

Ebauches S.A.: *See—*
Dubois, Gerald; and Berthoud, Francois, 3,783,606.

Echols, Samuel T., Jr.: *See—*
Hautly, Harry B.; and Echols, Samuel T., Jr., 3,783,820.

Eckels, Robert E.: *See—*
Law, Richard D.; and Eckels, Robert E., 3,784,125.

Eckert, John Presper, Jr.; Weiner, James R.; Shaw, Robert F.; and Weiss, Herbert Frazer, to Sperry Rand Corporation. Information handling system. 3,784,983, Cl. 340-172.005.

Economy, James; Cottis, Steve G.; and Nowak, Bernard E., to Carborundum Company, The. Oxybenzoyl polyester coated articles. 3,784,405, Cl. 117-132.00c.

Edamura, Fred Y.: *See—*
Larsen, Eric R.; Andrejewski, Bernard R.; and Edamura, Fred Y., 3,784,608.
Larsen, Eric R.; McKendry, Lennon H.; and Edamura, Fred Y., 3,784,610.
Larsen, Eric R.; McKendry, Lennon H.; and Edamura, Fred Y., 3,784,611.

Eddens, Fletcher C.; Corley, William P.; Salling, Jack Ronald; and McDonald, Ralph E., to Anderson Electric Corporation. Transmission line cable clamp. 3,784,137, Cl. 248-63.000.

Edge, Billy J.; and Collins, Lloyd O. Spray shield for oil wells. 3,783,939, Cl. 166-81.000.

Edmond, Marmound: *See—*
Florent, Brigliano; Ernest, Vogt; and Edmond, Marmound, 3,783,604.

Edwards, Bryant, to Illinois Tool Works Inc. Stackable container. 3,784,052, Cl. 220-97.00c.

EFKA-Werke Fritz Kienh GmbH: *See—*
Messner, Rudolf; and Zilken, Hans-Joachim, 3,783,882.

Eggenspepger, Heinz; Franzen, Volker; and Stephan, Hans, to Ciba-Geigy Marienberg GmbH. 3,5-Diallayl-4-hydrorgbenzylmercapto (acetic acid ester) containing phosphites. 3,784,650, Cl. 260-948.000.

Eggert, Glenn J., to Rex Chainbelt Inc. Ternary escort memory system. 3,784,942, Cl. 335-206.000.

Egloff, Frank S.: *See—*
Simpson, Arthur R.; and Egloff, Frank S., 3,783,918.

Eheim, Franz; and Schwartz, Reinhard, to Bosch, Robert, G.m.b.H. Fuel injection apparatus for gas turbine-type vehicle power plant. 3,784,330, Cl. 417-279.000.

Ehrenfried, Albert D.; and Pierce, Norton T., to Metritape, Inc. Discrete level detector. 3,783,689, Cl. 73-301.000.

Eickhoff, Heinz: *See—*
Gantre, Franz; Zywietz, Walter; Seiz, Rudolf; and Eickhoff, Heinz, 3,783,625.

Eisenbau Wghlen AG: *See—*
Wisz, Edward, 3,783,936.

Eishold, Horst-Gunter: *See—*
Ertl, Dietrich; Eishold, Horst-Gunter; Gilles, Helmut; Schmolling, Gunther; Steuernagel, Walter; and Nitz, Jurgen, 3,783,589.

Electro-Specialties, Inc.: *See—*
Miller, Arnold W.; and Larson, William D., Jr., 3,784,901.

Electronic Molding Corporation: *See—*
Murphy, James V., 3,784,965.

Elevator Safety Company: *See—*
Hamilton, Douglas, 3,783,978.

Elges, Carl H., III; Hasket, Philip R.; Bauer, Donald J.; and Lindstrom, Roald E., to United States of America, Interior. Recovery of metal values from chrome etching solutions. 3,784,669, Cl. 423-43.000.

Elin, Vyacheslav Alexandrovich: *See—*
Nekrasov, Konstantin Dmitrievich; Tarasova, Alexandra Petrovna; Bljusin, Alfred Avgustovich; Avdeeva, Tamara Petrovna; Elin, Vyacheslav Alexandrovich; Roizman, Pavel Aronovich; and Denisenko, Alexandr Panteleevich, 3,784,385.

Ellendman, Merrill: *See—*
Caserta, Richard T.; and Ellendman, Merrill, 3,784,365.

Elliot, William H.: *See—*
Van Horn, Lawrence E.; Elliot, William H.; and Schuchmann, Russell P., 3,784,881.

Ellis, Carter D. Article support and ladder attachment. 3,784,139, Cl. 248-210.000.

Ellison, Charles D.: *See—*
Ellison, Lynn E.; and Ellison, Charles D., 3,783,786.

Ellison, Lynn E.; and Ellison, Charles D. Self-inking hand stamp. 3,783,786, Cl. 101-333.000.

Elmore, James: *See—*
Willard, Edwin J.; and Elmore, James, 3,783,773.

Em. D'Hooge N. V.: *See—*
Haerick, Jan Armand, 3,783,653.

Emco Industries, Inc.: *See—*
Engman, Gerald, 3,783,801.

Emerson, Carl D.; and Aichenegg, Paul C., to Baychem Corporation. Carbamic acid esters of polyhalo disulfide alcohols. 3,784,563, Cl. 260-471.00c.

Emi, Tadashi. Pedestrian protecting fender. 3,784,244, Cl. 293-25.000.

Emil und Adolf Becker KG: *See—*
Moogk, Friedrich, 3,783,705.

Empire Products, Inc.: *See—*
Newman, Albert P.; and Haun, Clem Edward, 3,784,964.

Engalitcheff, John, Jr.; Facius, Thomas F.; Bradley, Wilson E., Jr.; and Anderson, Axel F. L., to Baltimore Aircoil Company, Inc., mesne. Evaporative heat exchange apparatus. 3,784,171, Cl. 261-29.000.

Engel, Albertus J. G.: *See—*
Versteeg, Geert; and Engel, Albertus J. G., 3,784,677.

English Electric Valve Company, Limited: *See—*
Cooper, Brian Frederick, 3,784,849.

Engman, Gerald, to Emco Industries, Inc. Article of furniture. 3,783,801, Cl. 108-60.000.

Engouist, Jan-Eric, to Forenade Fabriksverken. Washing device. 3,783,473, Cl. 15-322.000.

Ensley, Rufus Neal: *See—*
Duckett, John C.; Gaster, Ivan; and Ensley, Rufus Neal, 3,783,492.

Entreprise de Recherches et d'Activites Petrolieres (ELF): *See—*
de Chassy, Christian; and Capdeboscq, Andre, 3,783,816.

E.P.S. (Research & Development) Limited: *See—*
Boucher, Reginald Comyn, 3,783,766.

Erck, Karl: *See—*
Adler, Jurgen; Erck, Karl; Klebba, Horst; Kramer, Wolfgang; Maneck, Ernst; Mueller-Eckhardt, Hans; and Schwenk, Kurt, 3,783,568.

Ercoli, Alberto; and Gardi, Rinaldo, to Warner-Lambert Company. 17-Propionate, 21-ester derivatives of 6α,9α-difluoroprednisolone, compositions and use. 3,784,692, Cl. 424-243.000.

Erich, Reinhard; Hoffmann, Hermann; and Muhlbauer, Gerd Rudiger, to Hoffmann GmbH & Co., KG., Firma. Propeller blade. 3,784,322, Cl. 416-229.000.

Ernest, Vogt: *See—*
Florent, Brigliano; Ernest, Vogt; and Edmond, Marmound, 3,783,604.

Ernst, Arnold E. Plant cutting apparatus. 3,783,593, Cl. 56-14.400.

Erspamer, James R.; and Snyder, George W., to Sperry Rand Corporation. Multiplexed gain control for a synchro data transmission system. 3,784,753, Cl. 179-15.0fe.

Ertl, Dietrich; Eishold, Horst-Gunter; Gilles, Helmut; Schmolling, Gunther; Steuernagel, Walter; and Nitz, Jurgen, to Metallgesellschaft Aktiengesellschaft. Corona-discharge electrode system. 3,783,589, Cl. 55-146.000.

Erwin, Louis R., to Bendix Corporation, The. Linkage angle steering control from powered in-tandem vehicles. 3,783,963, Cl. 180-6.300.

ESB Incorporated: *See—*
Bergum, Bernard C.; and Youngquist, John A., 3,784,410.
Kosta, Geza F.; and Pomper, Anthony W., 3,784,406.
Macaulay, William R.; Feldhake, Ralph H.; Higgins, Dale G.; and Santa Maria, Richard C., 3,784,414.

Escoe, James L. Carpet cutter. 3,783,513, Cl. 30-273.000.

Escoe, James L. Carpet stretcher and kicker. 3,784,078, Cl. 227-13.000.

Esposito, Raymond G. Paint removal compositions. 3,784,477, Cl. 252-162.000.

Essex International Inc.: *See—*
Du Rocher, Gideon A., 3,784,941.

Esso Production Research Company: *See—*
Garcia, Juan A., 3,784,468.

Esso Research and Engineering Company: *See—*
Maravetz, Lester L., 3,784,574.
Moss, Gerald, 3,784,676.

Establissement Temova: *See—*
Stalder, Otto, 3,783,879.

Estabrook, Frederick C., to Mitchell Industrial Tire Co., Inc. Method of making built-up tire with butt welded internal band iron. 3,783,484, Cl. 29-159.001.

Ester, Wilhelm; and Heitmann, Wilhelm, to VEBA Chemie Aktiengesellschaft. Process for the manufacture of alcohols by the catalytic hydration of olefins. 3,784,614, Cl. 260-641.000.

Etablissement Radiator: *See—*
Von Platen, Baltzar; Jonsson, Einn Lennart; and Trolle, Sten, 3,783,775.

Ethier, Dolores O.: *See—*
Gobran, Ramsis; Kremer, Leon V.; and Ethier, Dolores O., 3,784,502.

Ethyl Corporation: *See—*
Bramfitt, Thomas Hugh, 3,783,849.
Hirschler, Daniel A., Jr.; and Marsee, Frederick J., 3,783,841.
Kobetz, Paul; and Niebylaski, Leonard M., 3,784,423.
Nelson, Gunner E.; and Pearson, Tillmon H., 3,784,486.
Niebylski, Leonard M., 3,784,682.
Scull, Herbert M., Jr., 3,784,372.

Ethylene Plastique: *See—*
Fourment, Marie-Claude Gloriod; and Nicco, Adrien, 3,784,396.

Etudes et Bonneterie S. A.: *See—*
Bourgeois, Norbert Paul, 3,783,640.

Etudes et Bonneterie S.A.: *See—*
Bourgeois, Norbert Paul, 3,784,129.

Eukumaru, Toshitsugu; Hamma, Noritaka; Nakatani, Hiroshi; Fukushima, Hideaki; and Toki, Katsuyuki, to Sumitoma Chemical Company, Limited. Fatty acid amide derivatives. 3,784,577, Cl. 260-404.000.

Eumuco Aktiengesellschaft fur Maschinenbau: *See—*
Nickrawietz, Kurt, 3,783,670.

Everbrite Electric Signs, Inc.: *See—*
Trame, Charles E., 3,783,539.

Ex-Cell-O Corporation: *See—*
Hurlock, Arthur C., 3,784,082.

Expo Nord AB: *See—*
Persson, Eric Sigrid; and Persson-Melin, Signe Harriet, 3,784,251.

Eysenring, Edward M., to Dual-Wide, Inc. Fold down eave for mobile home. 3,783,562, Cl. 52-69.000.

Facius, Thomas F.: *See—*
Engalitcheff, John, Jr.; Facius, Thomas F.; Bradley, Wilson E., Jr.; and Anderson, Axel F. L., 3,784,171.

Faggetter, Francis Edward, to Bettor Packages (V.K.) Limited. Tape dispensing apparatus. 3,784,073, Cl. 226-47.000.

Failing, Jim E. Liquid wax dispenser. 3,784,311, Cl. 401-137.000.

Fairaizl, Max L.; and Martinec, Eugene F., to Health-Mor Inc. Shag rug attachment for suction cleaner nozzle. 3,783,474, Cl. 15-369.000.

Fansteel Inc.: *See—*
Glaski, Frederick A., 3,784,403.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Joerchel, Egon; and Kohlhaas, Rudolf, 3,784,671.
Nahm, Helmut; and Siedel, Walter, 3,784,697.
Schorr, Manfred; and Duwel, Dieter, 3,784,633.

Fargo Machine & Tool Company: *See—*
Fortunski, Anthony C., 3,783,561.

Farkas, Elizabeth H.: *See—*
Glicksman, Martin; and Farkas, Elizabeth H., 3,784,712.

Farmer, Donald J.; Carlson, Charles J.; and Muschong, Peter W., to Central Moloney Inc. Bushing for transformers and the like. 3,784,733, Cl. 174-153.00r.

Farr, Gerald N.: *See—*
Goodman, Derek J.; and Farr, Gerald N., 3,783,639.

Farrar, Ralph C., to Phillips Petroleum Company. Multifunctional polymerization initiators from vinylsilanes or vinylphosphines and organomonolithium compounds. 3,784,637, Cl. 260-498.20q.

Farrington, Frederick: *See—*
Nicklin, Thomas; and Farrington, Frederick, 3,784,465.

Fassbender, Charles Joseph, to RCA Corporation. Storage circuits. 3,784,918, Cl. 328-97.000.

Faustel Incorporated: *See—*
Hardt, David R., 3,783,782.

Fay, Rudolph J. Sandwich machine. 3,783,772, Cl. 99-450.400.

Feasey, Ronald George, to Imperial Chemical Industries, Limited. Thermoset resins prepared from dihydric phenol, dihalobenzenoid compound and polyhaloheterocyclic compound. 3,784,504, Cl. 260-37.00n.

Feder, Abe Hyman. Lamp with indirect and direct lighting fixtures. 3,784,811, Cl. 240-81.01d.

Federal Pacific Electric Company: *See—*
De Torre, John, 3,784,940.

Federal Paper Board Company, Inc.: *See—*
Brown, William M., 3,784,000.

Federal Screw Works: *See—*
Velthoven, Arthur E., 3,783,734.

Fedosenko, Igor Grigorievich: *See—*
Morgolenko, Anatoly Sergeevich; Kononenko, Vadim Grigorievich; Fedosenko, Igor Grigorievich; Selivanov, Gennady Dmitrievich; Kushnarenko, Sergei Grigorievich; and Lepetjukha, Vladimir Semenovich, 3,783,672.

Felber, Julius: *See—*
Felber, Julius, 3,784,204.

Felber, Julius, to Felber, Julius and Szabo, Bela. Hockey puck. 3,784,204, Cl. 273-128.00r.

Feldhake, Ralph H.: *See—*
Macaulay, William R.; Feldhake, Ralph H.; Higgins, Dale G.; and Santa Maria, Richard C., 3,784,414.

Feldmann, Hans-Helmut: *See—*
Schadebrodt, Gerhard; Altzschner, Gustav; Feldmann, Hans-Helmut; Graichen, Bernhard; and Pabst, Wolfgang, 3,783,741.

Feliz, Jack M. Trailer maneuvering jack. 3,783,960, Cl. 180-14.00a.

Fellmann, Robert P.; and Whang, Jong Jai, to Rohm & Haas Company. Bulk polymerization process modified with solvent to reduce residual monomer content. 3,784,532, Cl. 260-86.10e.

Fenton, Donald M., to Union Oil Company of California. Decomposition of oxalates to form aldehydes and alcohols. 3,784,616, Cl. 260-638.00r.

Fernandes, Joseph F.: *See—*
Simmons, Carl E.; and Fernandes, Joseph F., 3,783,935.

Ferraro, Frank A.: *See—*
Dawidowicz, Jan; and Ferraro, Frank A., 3,783,493.
Dawidowicz, Jan; and Ferraro, Frank A., 3,783,510.

Ferro Manufacturing Company: *See—*
Pickles, Joseph, 3,784,241.

Fersch, Harry; and Kopido, Walter Heinz, to Singer Company, The. Sewing machine with a printed circuit switch and variable speed control means. 3,783,812, Cl. 112-220.000.

Feurer Bros., Inc.: *See—*
Feurer, Walter Alphonse, 3,783,607.

Feurer, Walter Alphonse, to Feurer Bros., Inc. Pusher for electronic digital watch. 3,783,607, Cl. 58-90.00b.

Fichelberger, Edward Baxter, to International Business Machines Corporation. Method of propagation delay testing a functional logic system. 3,784,907, Cl. 324-57.0de.

Fielding, Brian Grosble, to Imperial Chemical Industries Limited. Solvent dyeing or solvent creaseproofing with steam and solvent vapor drying. 3,784,355, Cl. 8-175.000.

Fields, Ellis K.; and Puskas, Imre, to Standard Oil Company. Catalysis of trans-acidolysis reaction. 3,784,573, Cl. 260-346.300.

Fife, Warren E.: *See—*
Munger, Fay E.; Fife, Warren E.; and Paolini, Alfred P., 3,784,259.

Finelli, Anthony F.; and Stanley, John R., to Goodyear Tire & Rubber Company, The. Method of accelerating the cure of polyurethanes. 3,784,521, Cl. 260-75.0nb.

Finke, Eugene W.: *See—*
Keefe, Jack D.; and Finke, Eugene W., 3,784,665.

Fire Protection Company: *See—*
Dix, Keith M.; and Bonbrake, Bert, Jr., 3,783,947.

Firestone, Raymond A., to Merck & Company, Inc. Hydroxy and imino containing phosphonic acid diesters. 3,784,590, Cl. 260-944.000.

Fischer & Porter Company: *See—*
Mannherz, Elmer D.; Riester, Hubert A.; Schmoock, Roy F.; and Yard, John S., 3,783,687.

Fischer, Adolf: *See—*
Rohr, Wolfgang; and Fischer, Adolf, 3,784,564.

Fischer, Friedhelm: *See—*
Hoffmann, Hans-Jurgen; and Fischer, Friedhelm, 3,784,228.

Fischer, Georg, Aktiengesellschaft: *See—*
Wernli, Max, 3,784,178.

Fischler, Max, to Astra Lakemedel Aktiebolag. X-ray contrast composition containing barium sulphate. 3,784,681, Cl. 424-4.000.

Fishcer & Porter Company: *See—*
Hentschel, Rainer, 3,783,686.

Fisher & Porter Company: *See—*
Azegami, Tadashi, 3,784,919.

Fisher, Frank W. Fish catch keeper. 3,783,548, Cl. 43-21.200.

Fitzgerald, Walter P., Jr.: *See—*
Bagheri, Mansour A. H.; Fitzgerald, Walter P., Jr.; and Sanders, Beatrix Y., 3,784,435.

Fitzi, Konrad; and Pfister, Rudolf, to Ciba-Geigy Corporation. Imidazole derivatives for treating pain, inflammation and fever. 3,784,691, Cl. 424-273.000.

Flannelly, William G., to Kaman Aerospace Corporation. Damped gyroscopic stabilizer. 3,784,363, Cl. 74-5.340.

Flasch, John Robert: *See—*
Lerner, Robert Wendell; Hayati, Hossein; and Flasch, John Robert, 3,784,505.

Flaschar, Heinz: *See—*
Schneider, Klaus; and Flaschar, Heinz, 3,783,901.

Fleck, Lawrence L.; and Hickling, Robert, to General Motors Corporation. Occupant restraint system. 3,784,225, Cl. 280-150.0ab.

Fleissner, Heinz, to Vepa AG. Process for the treatment of material lengths. 3,783,526, Cl. 34-12.000.

Fleming, George Latto; and Martin, Richard John, to Ciba-Geigy AG. Curing epoxide resin with boran trichloride-amine complex. 3,784,647, Cl. 260-830.0tw.

Florent, Brigliano; Ernest, Vogt; and Edmond, Marmound, to PR Societe de Revision, Traitement de l'Information et Recouvrement SA. Wrist watch with a dial-illuminating device. 3,783,604, Cl. 58-50.00r.

Flouret, George Rogelio, to Abbott Laboratories. Nonapeptide intermediate to gonadotropin releasing hormone. 3,784,535, Cl. 260-112.500.

Fluharty, Gordon S.: *See—*
Phillips, Richard F.; and Fluharty, Gordon S., 3,783,534.

FMC Corporation: *See—*
Wenglar, Frank G., 3,784,157.

Fock, Jurgen; and Holtschmidt, Ulrich, to Goldschmidt, Th., AG. Method of treating a wood surface with linear heat-hardenable copolymerizate. 3,784,436, Cl. 156-334.000.

Foederer, Antonius Franciscus; Franken, Andrianus Jacobus Jozef; and Van Noord, Jacobus Andrianus Johannes Maria, to U.S. Philips Corporation. Crosstable for articles. 3,783,707, Cl. 74-470.000.

Foerstner, Richard A.; and Fritts, Rex E., to Amana Refrigeration, Inc. Magnetron moding interrupter control circuit. 3,784,781, Cl. 219-10.550.

Folden, Denver C.: *See—*
Appleby, Paul E.; Folden, Denver C.; and Kubinski, Donald C., 3,784,437.

Foote, Daniel J., to Master Lock Company. Looped cable end clamp. 3,783,656, Cl. 70-18.000.

Foote, Daniel J., to Master Lock Company. Padlock body affixed shackle enveloping guard. 3,783,657, Cl. 70-52.000.

Forano Limitee: *See—*
Payeur, Marcel, 3,783,725.

Forbes, Hampton E., Jr., to Westvaco Corporation. Display package. 3,784,086, Cl. 229-55.000.

Ford Motor Company: *See—*
Burgett, James F.; Vanderberg, Lawrence J.; and Woodward, Gary F., 3,784,973.
Jackson, Paul L., 3,784,459.
Kolody, Dale A., 3,783,847.

Forenade Fabriksverken: *See—*
Engouist, Jan-Eric, 3,783,473.

Forgo, Gabor; Meyer, Erwin; and Schilter, Josef, to Zellweger AG. Apparatus for developing latent electrostatic charge images. 3,783,828, Cl. 118-637.000.

Fortunski, Anthony C., to Fargo Machine & Tool Company. Constant surface speed grinder. 3,783,561, Cl. 51-134.50r.

Foster, Kenneth J.: *See—*
Benson, Alden P.; Foster, Kenneth J.; and Quellette, Alfred R., 3,783,452.

Fourment, Marie-Claude Gloriod; and Nicco, Adrien, to Ethylene Plastique. Process for treating a substrate with ethylene-maleic anhydride copolymer powder. 3,784,396, Cl. 117-21.000.

Fourny, Denise Gisele Josette, to Belling & Co., Limited. Electric liquid boiling apparatus having an electronic temperature sensor control. 3,784,788, Cl. 219-441.000.

Fowler, John H.; and Johnson, Charles F., to Rockwell International Corporation. Valve operator. 3,783,899, Cl. 137-624.200.

Fox, Charles J., to Eastman Kodak Company. Photoconductive element containing furans, indoles, or thiophenes. 3,784,376, Cl. 96-1.500.

Fox, James H.; Leung, Han-Chung; and Stern, Howard R., to Mattel, Inc. Kissing doll phonograph. 3,784,210, Cl. 274-1.00a.

Foxboro Company, The: *See—*
Hansen, Peter D., 3,783,692.

Franck, Heinz-Gerhard; Metzendorf, Walter; Schweym, Erich; Beneke, Herbert; Marrett, Rolf; Nijssen, Jozef; and Omran, Jaafar, to Rutgerswerke Aktiengesellschaft. Process for making a foam from a composition comprising bituminous masses, a novolac, and hexaethylenetetramine. 3,784,487, Cl. 260-2.50f.

Frank, William; and Lindgren, Frank E. Layout marking wheel. 3,783,785, Cl. 101-328.000.

Frankel, Milton B.; and Lo, George A., to Rockwell International Corporation. Thermally stable high density-impulse energetic composition of matter. 3,784,420, Cl. 149-22.000.

Franken, Andrianus Jacobus Jozef: *See—*
Foederer, Antonius Franciscus; Franken, Andrianus Jacobus Jozef; and Van Noord, Jacobus Andrianus Johannes Maria, 3,783,707.

Frankenfeld, Klaus: *See—*
Beltz, Klaus; Frankenfeld, Klaus; and Gotzmann, Karl, 3,784,678.

Franklin Manufacturing Company: *See—*
Archbold, Ralph L., 3,783,652.

Franklyn, Stanley: *See—*
Gilbert, Jack A.; and Franklyn, Stanley, 3,784,430.

Franks, Joseph. Ion sources. 3,784,858, Cl. 313-63.000.

Franzen, Volker: *See—*
Eggenspepger, Heinz; Franzen, Volker; and Stephan, Hans, 3,784,650.

Frazier, Van L., Sr. Air ride suspension for trucks. 3,784,221, Cl. 280-124.00f.

Freeman, Harlan G.: *See—*
Baxter, Gene F.; Freeman, Harlan G.; and Tiedeman, George T., 3,784,516.

Freeman, Harlan G.; Baxter, Gene F.; and Graham, George, to Weyerhaeuser Company. Rapid curing resin compositions comprising the reaction product of aldehyde condensation polymer with a primary aromatic amine further reacted with. 3,784,515, Cl. 260-51.500

Frel, Jorg; Morel, Charles J.; and Wacker, Oskar, to Ciba-Geigy Corporation. Aryloxy- and arylthioalkanoic acids and esters and salts thereof. 3,784,602, Cl. 260-346.02m.

Frempter, Wayne W., to Rain Jet Corporation. Liquid discharge nozzle having cylindrical internal liquid flow director means. 3,784,101, Cl. 239-17.000.

Frenkel, Marshall S., to Pan-American Records (Casa Pan Americana) Inc. Display case. 3,784,269, Cl. 312-136.000.

Frese, Ralph L. Wheel removal safety device. 3,784,161, Cl. 254-88.000.

Frick, George W., to Cities Service Research & Development Company. Process and apparatus for oil shale retorting. 3,784,462, Cl. 208-11.000.

Friedel, Murray, to Visual Graphics Corporation. Exposing and developing apparatus for photographic composing device. 3,783,756, Cl. 95-4.500.

Friedman, David; and Segal, Bernard Mortimer, to Singer Company, The. Response system with improved computational methods and apparatus. 3,784,979, Cl. 340-146.200.

Friendship, Kenneth F., to A-T-O Inc. Beverage container filling head. 3,783,912, Cl. 141-46.000.

Fritts, Rex E.: *See—*
Foerstner, Richard A.; and Fritts, Rex E., 3,784,781.

Frohlich, Alfons, to Opti-Holding AG. Slide fastener stringer with stitched coupling element. 3,783,476, Cl. 24-205.16c.

Fromwiller, Frank J.: *See—*
Caming, Lionel P.; and Fromwiller, Frank J., 3,783,768.

Froning, H. R.: *See—*
Dauben, Dwight L.; and Froning, H. R., 3,783,945.

Fuchs, Gundolf: *See—*
Pirck, Dietrich; Fuchs, Gundolf; and Sachse, Gerhard, 3,784,528.

Fuhring, Heinrich: *See—*
Weber, Hans-Peter; Litzler, Alfred; Hertig, Jean; Milicevic, Branimir; Fuhring, Heinrich; Sieber, Johannes-Helmut; and 042818, 3,783,650.

Fuji Denki Seizo Kabushiki Kaisha: *See—*
Fujii, Hisashi, 3,784,851.

Fuji Photo Film Co., Ltd.: *See—*
Fukushima, Osamu; Sato, Masamichi; and Honjo, Satoru, 3,783,827.

Fuji Shashin Film Kabushiki Kaisha: *See—*
Okano, Takeshi, 3,784,295.

Fuji Toyuki Co., Ltd.: *See—*
Miyake, Susumu, 3,783,971.

Fuji Xerox Co., Ltd.: *See—*
Makino, Katsuo; Joh, Seiji; and Takeda, Kouzou, 3,783,818.

Fujii, Hisashi, to Fuji Denki Seizo Kabushiki Kaisha. Ventillating arrangement for dynamo-electric machines. 3,784,851, Cl. 310-58.000.

Fujitsu Limited: *See—*
Inaba, Seiuemon; Ikebe, Yo; and Yamamura, Sakae, 3,784,850.

Fujiwara, Mitsuto: *See—*
Iwama, Masakuni; Fujiwara, Mitsuto; Kojima, Tamotsu; and Yamaoto, Toshihiko, 3,784,383.

Fukushima, Hideaki: *See—*
Eukumaru, Toshitsugu; Hamma, Noritaka; Nakatani, Hiroshi; Fukushima, Hideaki; and Toki, Katsuyuki, 3,784,577.

Fukushima, Osamu: *See—*
Sato, Masamichi; and Fukushima, Osamu, 3,784,397.

Fukushima, Osamu; Sato, Masamichi; and Honjo, Satoru, to Fuji Photo Film Co., Ltd. Liquid development apparatus for electrophotography. 3,783,827, Cl. 118-637.000.

Fukushima, Yoshio: *See—*
Ogawa, Kiyoshi; Yokoyama, Yoshiaki; and Fukushima, Yoshio, 3,783,706.

Full, Donald A.: *See—*
Rainer, Norman B.; and Full, Donald A., 3,784,490.

Fuller, Blaine W.: *See—*
Channell, Glenn L.; Fuller, Blaine W.; and Davisson, Kenneth R., 3,784,162.

Furney, Charles P., Jr., to Aluminum Company. Underfired forging die heater. 3,783,669, Cl. 72-342.000.

Gabor, Iacob: *See—*
Coanda, Henry; Aldea, Gheorghe; Bodea, Ion; Truica, Vasile; Hanciulescu, Valentin; Posirca, Radu; Lazar, Cristian; and Gabor, Iacob, 3,784,325.

Gagneux, Vandre; Heckendorn, Roland; and Meier, Rene, to Ciba-Geigy Corporation. Certain 2-amino-6-phenyl-4H-s-triazolo[1,5-a][1,4]benzodiazepines. 3,784,556, Cl. 260-308.00r.

Gallagher, John J.: *See—*
Preus, Paul; and Gallagher, John J., 3,783,621.

Gallant, James O., to Mount Hope Machinery Company. Curved roll. 3,783,481, Cl. 29-116.0ad.

Gambell, Charles L. Method and system for the containment and salvage of chemicals and oils at sea. 3,783,622, Cl. 61-1.00f.

Gano, Orville. Anti-pollution internal combustion engine. 3,783,610, Cl. 60-16.000.

Ganter, Wolfgang; and Dinger, Horst, to Gebruder Junghans G.m.b.H., Firma. Electromechanic driving mechanism for the hands of a timepiece. 3,783,600, Cl. 58-28.00b.

Gantre, Franz; Zywietz, Walter; Seiz, Rudolf; and Eickhoff, Heinz, to Hoesch AG and Bochumer Eisenhutte Heintzmann & Co. Lining system for tunnels and like passages. 3,783,625, Cl. 61-45.00r.

Garcia, Juan A., to Esso Production Research Company. System and method for separating heavier and lighter components of liquid mixtures. 3,784,468, Cl. 210-44.000.

Gardi, Rinaldo: *See—*
Ercoli, Alberto; and Gardi, Rinaldo, 3,784,692.

Garfinkel, Jack, to Genstape, Inc. Apparatus for splicing wires. 3,783,490, Cl. 29-203.00d.

Garner, Paul Johnson; and Collins, Thomas Robert Stephen, to Imperial Chemical Industries, Limited. Process of producing a composite mold having cooling pipes embedded therein. 3,784,152, Cl. 249-80.000.

Garner, Paul Johnson, to Imperial Chemical Industries Limited. Method of fabricating a composite mold having a resin-impregnated metal molding surface. 3,784,451, Cl. 204-20.000.

Garnish, Edward William; and Hayes, Barry James, to Ciba-Geigy AG. Reinforced composites. 3,784,433, Cl. 156-276.000.

Garrett Corporation, The: *See—*
Norman, Leslie W.; Hunter, Skillman C.; and Russell, George A., 3,783,616.

Garrity, Paul G.: *See—*
Court, Patrick R. J., 3,784,352.

Gartland, Albert J., Jr., to Hubbell, Harvey, Incorporated. Cable clamp. 3,784,961, Cl. 339-107.000.

Gas Council, The: *See—*
Nicklin, Thomas; and Farrington, Frederick, 3,784,465.

Gascoigne, Richard Melville: *See—*
Baker, David Keith; Eason, Ronald Charles; Gascoigne, Richard Melville; and Schryver, Andrew, 3,784,875.

Gaster, Ivan: *See—*
Duckett, John C.; Gaster, Ivan; and Ensley, Rufus Neal, 3,783,492.

Gateway Industries, Inc.: *See—*
Bryll, Medard Z., 3,784,769.

Gatzi, Karl, to Ciba-Geigy Corporation. Control of phytopathogenic fungi with amidine compounds. 3,784,690, Cl. 424-244.000.

Gauchel, Peter: *See—*
Wissinger, Waldemar; Kurth, Josef; and Gauchel, Peter, 3,784,345.

Gaunt, Dennis: *See—*

Ladyman, Francis Peter; and Gaunt, Dennis, 3,783,643.
Gebhardt, Rudolf: *See—*
Gopfert, Max; and Gebhardt, Rudolf, 3,783,794.
Gebruder Junghans G.m.b.H., Firma: *See—*
Ganter, Wolfgang; and Dinger, Horst, 3,783,600.
Geesen, Michel, to Societe dite: Electronique Marcel Dassault. Serially operated comparison system with discontinuance of comparison on first mismatch. 3,784,980, Cl. 340-146.200.
Geiersbach, Allois F.; and Stich, Frederick A., to Allis-Chalmers Corporation. Control for commutatorless motor. 3,784,888, Cl. 318-138.000.
Geiersbach, Allois F.; and Price, Raymond G., to Allis-Chalmers Corporation. Pulse control circuit for a DC load. 3,784,890, Cl. 318-345.000.
Gela, Helmut: *See—*
Muszumanski, Trude; and Gela, Helmut, 3,784,283.
General Dynamics Corporation: *See—*
Vaughan, Desmond H., 3,783,573.
General Electric Company: *See—*
Ashley, Eugene, 3,783,737.
Bigelow, John E., 3,784,280.
Bowers, David L., 3,783,877.
Chang, Shao-Yuen S., 3,784,424.
Davis, Donald Y., 3,784,318.
Dills, Raymond L., 3,783,853.
Hall, James A., 3,784,926.
Hudis, Martin, 3,783,588.
Hurko, Bohdan; and Dills, Raymond L., 3,783,854.
Kenyon, Lewis W.; and Plemmons, Jerry R., 3,784,806.
Kurz, Bruno; Barron, Mark B.; and Butler, Walter J., 3,784,847.
Preston, Charles F., 3,784,856.
Richter, Eike; and Brissey, George E., 3,783,502.
Ryan, Paul T., 3,784,813.
Shanks, Bruce E., 3,784,865.
General Foods Corporation: *See—*
Colten, Frank P.; and Kaplan, Morton, 3,784,713.
Glicksman, Martin; and Farkas, Elizabeth H., 3,784,712.
McReynolds, James L.; and Topalian, Harry H., 3,784,714.
General Motors Corporation: *See—*
Barnhart, Bruce R.; and Hill, David C., 3,783,846.
Brandstetter, Walter R., 3,783,845.
Brinkerhoff, Donald E., 3,784,748.
Davis, Leonard C., 3,784,267.
De Gioia, Peter A.; and Sutton, Charles B., 3,784,268.
Fleck, Lawrence L.; and Hickling, Robert, 3,784,225.
Gural, John A., 3,783,844.
Heidorn, John H., 3,783,634.
Heidorn, John H., 3,784,331.
Hill, Kim, 3,784,242.
Iadipaolo, Rene M., 3,784,921.
Kuck, Lloyd L., 3,783,700.
Miller, James L.; Wright, Carl J.; and Harrold, Marshall C., 3,783,529.
Ranft, Ernst L.; and Thornburgh, William F., 3,783,848.
Sebring, John G.; and Downs, Thomas C., 3,784,337.
Wanner, Joseph W., 3,784,220.
Weber, John A., 3,784,839.
Whelan, James E., 3,784,333.
Zelenka, Donald J., 3,784,947.
General Ordnance Equipment Corporation: *See—*
Litman, Alan, 3,784,278.
General Systems, Inc.: *See—*
Zelina, William B., 3,784,892.
General Tire & Rubber Company, The: *See—*
Nemec, John E., 3,784,181.
Genstape, Inc.: *See—*
Garfinkel, Jack, 3,783,490.
Gentiluomo, Joseph A. Golf game. 3,784,207, Cl. 273-176.00a.
Geominy, Louis Joseph Henri; Gommans, Hubertus Johannes Josephus; Mans, Leonardus Frans Helene; and Ruytenbeek, Silvester Marie, to U.S. Philips Corporation. Hair curler heating device with electric resistance cable. 3,784,784, Cl. 219-222.000.
Georgia-Pacific Corporation: *See—*
Howe, William J., 3,783,579.
Gerard, William L.; and Ruck, John D., to Sherwood Medical Industries Inc. Syringe package. 3,783,996, Cl. 206-17.500.
Gerardus Bom, Cornelis Johannes: *See—*
van der Lely, Ary; and Gerardus Bom, Cornelis Johannes, 3,783,948.
Gerhard, Scharfe: *See—*
Wolfgang, Swodenk; Gerhard, Scharfe; and Grolig, Johann, 3,784,578.
Gerlich Leonhard: *See—*
Hirt, Dieter; Gerlich Leonhard; and Heinle, Eugen, 3,783,681.
Gernandt, Louis E.: *See—*
Knutson, Orlie E.; Gernandt, Louis E.; and Charmoli, Arthur J., 3,783,577.
Gershman, Russell John: *See—*
Woolf, Julius Isadore; Sadowy, Roman, Jr.; and Gershman, Russell John, 3,784,757.
Gervolsky, Marlen Mikhailovich: *See—*
Tolochko, Cheslav Stanislavovich; Popov, Vladimir Ivanovich; Tsitsiv, Miron Vasilievich; Varfolomeev, Alexandr Nikolaevich; and Gervolsky, Marlen Mikhailovich, 3,783,595.
Geurts, Cletus J., to Geurts Inc. Semi-mounted plow. 3,783,950, Cl. 172-285.000.
Geurts Inc.: *See—*
Geurts, Cletus J., 3,783,950.
Giannetoo, Salvatore. Automobile trunk lock safety adapter. 3,783,655, Cl. 70-1.500.
Gibbons, Carl L., to Dow Chemical Company, The. Halogenated epoxides. 3,784,500, Cl. 260-30.40r.
Gibbs, Richard E.: *See—*
Altwicker, Elmar R.; Gibbs, Richard E.; and Kolak, Nicholas P., 3,784,478.
Gibson, Roland Richard, to Glacier Metal Company, Limited, The. Centrifugal separator. 3,784,092, Cl. 233-20.00r.
Giddings & Lewis, Inc.: *See—*
Beadle, Bruce R.; and Bollinger, John G., 3,784,798.
Gieben, Wibmar Uber: *See—*
Jellinek, Karl; Post, Udo; Gieben, Wibmar Uber; and Oellig, Rudi, 3,784,601.
Giguere, Jacques; and Landry, Jean-Guy, to Dryden Chemicals, Limited. Aminolignosulfonate-formaldehyde reaction products and process of preparation. 3,784,493, Cl. 260-17.500.
Gilbert, Edward O.; and Gilbert, Elmer G., to Reliance Electric Company. Predictive drive control. 3,783,974, Cl. 187-29.00r.
Gilbert, Elmer G.: *See—*
Gilbert, Edward O.; and Gilbert, Elmer G., 3,783,974.
Gilbert, Jack A.; and Franklyn, Stanley, to Container Company of New York. Method for manufacturing corrugated angle members. 3,784,430, Cl. 156-200.000.
Gill, Peter John, to G.K.N. Screws & Fasteners Limited. Power tool. 3,783,955, Cl. 173-50.000.
Gill, Vincent A., to Unican Security Systems, Ltd. Pick resistant lock. 3,783,660, Cl. 70-363.000.
Gilles, Helmut: *See—*
Ertl, Dietrich; Eishold, Horst-Gunter; Gilles, Helmut; Schmolling, Gunther; Steuernagel, Walter; and Nitz, Jurgen, 3,783,589.
Gillette Company, The: *See—*
Brown, Norman Joseph; Packham, Charles Christopher; and Parsonage, Raymond Graham, 3,783,508.
Perry, Roger L., 3,783,507.
Gilman, Paul B., Jr.; and Kaukeinen, Joseph Y., to Eastman Kodak Company. Latent electrostatic image forms a developable image in a silver salt. 3,784,375, Cl. 96-1.00r.
Ginsburgh, Irwin: *See—*
Husa, Howard W.; and Ginsburgh, Irwin, 3,783,911.
Girling Limited: *See—*
Hess, Wolfgang, 3,783,979.
Gjoerloff, H. Eric, to Redy-Tow, Inc. Tow trailer for vehicle. 3,784,036, Cl. 214-86.00a.
G.K.N. Screws & Fasteners Limited: *See—*
Gill, Peter John, 3,783,955.
Glacier Metal Company, Limited, The: *See—*
Gibson, Roland Richard, 3,784,092.
Glaesener, Ernest, to ARBED-Acieries Reunies de Burbach-Eich-Dudelange. Guard-rail assembly with pivotal support posts. 3,784,167, Cl. 256-13.100.
Glaski, Frederick A., to Fansteel Inc. Process for cladding steel. 3,784,403, Cl. 117-71.00m.
Glasman, Leon; and Prioux, Jean O. Needle table for padding of pattern fabrics. 3,783,728, Cl. 83-620.000.
Gleason Corporation: *See—*
Westrich, James L., 3,783,458.
Glicksman, Martin; and Farkas, Elizabeth H., to General Foods Corporation. Gum gelling system xanthan-tara dessert gel. 3,784,712, Cl. 426-167.000.
Global Marine Inc.: *See—*
Blurton, Leon C.; and Cina, Saverio J., 3,783,627.
Globe Tool and Engineering Company, The: *See—*
Biddison, John M.; and Donnaker, Clarence W., 3,783,501.
Glynn, Emmett P.; and Hsu, Howard L., to Liquid Carbonic Corporation. CO_2 refrigeration system. 3,783,633, Cl. 62-168.000.
Gobran, Ramsis; Kremer, Leon V.; and Ethier, Dolores O., to Minnesota Mining and Manufacturing Company. Block copolymer compositions. 3,784,502, Cl. 260-33.6pq.
Goff, Thurman E. Honeycomb foundation installing device. 3,783,460, Cl. 6-10.000.
Golbs, Christian: *See—*
Naumann, Siegfried; Lauchner, Manfred; Golbs, Christian; and Schubert, Harry, 3,783,646.
Gold, Ronald J., to Uni-Systems, Inc. Display device and method of merchandising and inventory control. 3,784,027, Cl. 211-184.000.
Goldbach, Erika: *See—*
Goldbach, Wend, 3,783,552.
Goldbach, Wend, to Goldbach, Erika. Driving apparatus, especially for a floating toy. 3,783,552, Cl. 46-92.000.
Golde, Karl-Heinz; and Schuler, Ernst. Apparatus for replacing the roller guide sections of the strand guiding assemblies of continuous casting plants. 3,783,934, Cl. 164-282.000.
Goldman, Samuel C.: *See—*
Martone, Ronald J.; Goldman, Samuel C.; and Heaton, Clifford C., 3,784,819.
Goldschmidt, Th., AG: *See—*
Fock, Jurgen; and Holtschmidt, Ulrich, 3,784,436.
Goletz, Hubert: *See—*
Kuhne, Wolfgang; and Goletz, Hubert, 3,783,718.

Goller, Ernst: *See—*
Hadam, Wilhelm; and Goller, Ernst, 3,783,642.
Gombar, Eugene Leonard: *See—*
Reynolds, Charles Edward; and Gombar, Eugene Leonard, 3,784,955.
Gommans, Hubertus Johannes Josephus: *See—*
Geominy, Louis Joseph Henri; Gommans, Hubertus Johannes Josephus; Mans, Leonardus Frans Helene; and Ruytenbeek, Silvester Marie, 3,784,784.
Goodhouse, Carl J.; and Strachan, Robert, to Robertshaw Controls Company. Cooking computer means. 3,783,769, Cl. 99-332.000.
Goodinge, Mark Wallinger; and Moss, Norman, to Plessey Handel und Investments A.G. Atomizing devices for liquid fuel. 3,784,105, Cl. 239-102.000.
Goodman, Daniel J. Water-cooled electric furnace cable. 3,784,722, Cl. 174-15.00c.
Goodman, Derek J.; and Farr, Gerald N., to Ingersoll Machine and Tool Company Limited. Resilient joint. 3,783,639, Cl. 64-27.0nm.
Goodrich, B. F., Company, The: *See—*
Kuts, Mathew, 3,784,431.
Parker, Richard G., 3,784,565.
Wheelock, George L., 3,784,401.
Goodwin, Ralph C. Modulating heat control. 3,784,094, Cl. 236-68.00c.
Goodyear Tire & Rubber Company, The: *See—*
Appleby, Paul E.; Folden, Denver C.; and Kubinski, Donald C., 3,784,437.
Chambers, Thomas G., 3,784,587.
Finelli, Anthony F.; and Stanley, John R., 3,784,521.
Maly, Neil A.; Menapace, Henry R.; and Benner, Gerald S., 3,784,629.
Maly, Neil A.; Menapace, Henry R.; and Benner, Gerald S., 3,784,630.
Menapace, Henry R.; Benner, Gerald S.; and Maly, Neil A., 3,784,631.
Milan, Ernest A., 3,784,071.
Osborn, Robert A.; St. Cyr, David R.; and Bullard, Herbert L., 3,784,530.
Woodhall, Edwin S.; Appleby, Paul E.; and Touchette, John W., 3,784,426.
Goorissen, Jan: *See—*
Notelteirs, Victor Rosallie; and Goorissen, Jan, 3,784,861.
Goozner, Murray. Blank-faced childs doll. 3,783,553, Cl. 46-116.000.
Gopfert, Max; and Gebhardt, Rudolf, to Krauss-Maffei AG. Magnetic suspension system for vehicles and the like with non-controlled suspending magnets. 3,783,794, Cl. 104-148.0ms.
Gopman, Martin D.: *See—*
Miscevic, Daniel V., 3,783,808.
Gordon, Donald T., to United States of America, Navy. Flotation beam for matting construction. 3,784,312, Cl. 404-35.000.
Gordon, George, to Peabody Engineering Corporation. Bag filter unit. 3,784,019, Cl. 210-486.000.
Gores, Kenneth W.: *See—*
Otis, George A.; and Gores, Kenneth W., 3,784,063.
Gotz, Hans: *See—*
Wilfert, Karl; and Gotz, Hans, 3,784,226.
Gotzmann, Karl: *See—*
Beltz, Klaus; Frankenfeld, Klaus; and Gotzmann, Karl, 3,784,678.
Gould Inc.: *See—*
Harris, Lee M., 3,784,958.
Gourse, Jerome A., to Velsicol Chemical Corporation. Indenylphosphonates. 3,784,652, Cl. 260-956.000.
Grace, W. R., & Co.: *See—*
Morgan, Charles R., 3,784,524.
Graham, George: *See—*
Freeman, Harlan G.; Baxter, Gene F.; and Graham, George, 3,784,515.
Graichen, Bernhard: *See—*
Schadebrodt, Gerhard; Altzschner, Gustav; Feldmann, Hans-Helmut; Graichen, Bernhard; and Pabst, Wolfgang, 3,783,741.
Gramas, John Vincent, to Du Pont de Nemours, E. I., and Company. Double-exposure method for producing reverse images in photopolymers. 3,784,378, Cl. 96-27.00e.
Granta Corporation: *See—*
Wyman, Dennis G.; Bichell, William J.; and Oliveri, Humber, 3,784,201.
Grasse, Hans Jochen: *See—*
Heitmann, Owe; and Grasse, Hans Jochen, 3,783,677.
Graul, John Michael, to Chevron Research Company. Seismic record processing method. 3,784,967, Cl. 340-15.5tc.
Gray, Basil P., to Commercial Shearing, Inc. Self-bonding elastomeric sealant. 3,784,522, Cl. 260-77.5cr.
Gray, Darby A.: *See—*
Markowitz, Ivan N.; and Gray, Darby A., 3,784,943.
Gray, Guy Gordon. De-icing structure for roofs. 3,784,783, Cl. 219-213.000.
Greene, Alan D. Apparatus for securing articles. 3,784,232, Cl. 281-20.000.
Greenwald, Harry, to Kidde, Walter, & Company, Inc. Anti-pick lock assembly. 3,783,661, Cl. 70-419.000.
Greenwood, Aaron O.; Magee, Ramon J.; and Otto, Stanley W., to Hallmark Cards, Incorporated. Rotary screen printing cylinder. 3,783,779, Cl. 101-127.000.
Greer Hydraulic, Inc.: *See—*
Jacobellis, Alphonse A., 3,783,746.
Greive, Aloys; and Treus, Aloys, to Hamel GmbH, Zwirnmaschinen. Thread-twisting apparatus with dual thread guide. 3,783,597, Cl. 57-58.520.
Grey, David S., to Berkey Photo, Inc. Plastic triplet objective lens system. 3,784,287, Cl. 350-226.000.
Griesinger, Wolfram, to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Method for making thin walled metal tubing. 3,783,497, Cl. 29-460.000.
Griffin, Thomas Franklin, to Burlington Industries, Inc. Method of making and treating bias cut fabric. 3,784,427, Cl. 156-139.000.
Griffiths, Peter John: *See—*
Williams, John Gordon; and Griffiths, Peter John, 3,783,885.
Griggs, W. Kenneth, to Lee, Raymond, Organization, Inc., The. Antisnagging fishing gear. 3,783,549, Cl. 43-42.400.
Grimm, Hans-Ueli; Zufferey, Daniel; and Messina, Antonio, to Inventio Aktiengesellschaft. Apparatus for plug connection of printed circuit boards. 3,784,954, Cl. 339-17.01m.
Griswold, Augustus W.: *See—*
Sullivan, William A., Jr.; and Griswold, Augustus W., 3,784,303.
Grolig, Johann: *See—*
Wolfgang, Swodenk; Gerhard, Scharfe; and Grolig, Johann, 3,784,578.
Grommek, Siegfried. Doctor blade control mechanism, particularly for use in printing presses. 3,783,781, Cl. 101-157.000.
Groos, Horst Hans; and Zander, Walter, to Schloemann Aktiengesellschaft. Pre-stressed press frame. 3,783,774, Cl. 100-214.000.
Gropper, Hans: *See—*
Pfannmueller, Helmut; Urban, Friedrich; Buechner, Oskar; Gropper, Hans; and Sistig, Wolf, 3,784,538.
Grosse, Wolfgang C. F. Connecting elements for wire frames. 3,784,026, Cl. 211-181.000.
Grossman, Harry. Combined scouring device holder and scraper. 3,783,467, Cl. 15-105.000.
Grot, Walther Gustav, to Du Pont de Nemours, E. I., and Company. Films of fluorinated polymer containing sulfonyl groups with one surface in the sulfonamide or sulfonamide salt form and a process for preparing such. 3,784,399, Cl. 117-62.100.
Grothe, John; and Osborne, Brian Frank, to Milltronics Limited. Fluid sampling apparatus. 3,783,695, Cl. 73-422.000.
Grunwald, John J.; D'Ottavio, Eugene D.; Rhodenizer, Harold L.; and Lombardo, Michael S., to MacDermid, Incorporated. Aluminum-clad plastic substrate laminates. 3,784,440, Cl. 161-185.000.
Gryctko, Carl E., to I-T-E Imperial Corporation. Arc runner between stationary contacts. 3,784,775, Cl. 200-146.00r.
GTE Automatic Electric Laboratories, Incorporated: *See—*
Caputo, James P.; and Weber, Fred A., 3,784,801.
Jassman, Gerald R., 3,784,956.
Neu, John P., 3,784,878.
GTI Corporation: *See—*
Bailey, Richard J., 3,784,957.
Gubler, Kurt, to Ciba-Geigy Corporation. Control of insects and acarinae with 4,4-dibromo and 4-chloro-4-bromo-benzilic acid esters. 3,784,696, Cl. 424-308.000.
Gugin, Robert J. Harrow assembly with rock frame tubes. 3,783,951, Cl. 172-311.000.
Guichard, Jean, to Centre d'Etudes Techniques des Industries de l'Habillement. Device for turning-in the border of pieces made of flexible sheets. 3,783,805, Cl. 112-2.000.
Gulf Oil Canada Limited: *See—*
Kaminsky, Victor Paul, 3,784,464.
Gulf Oil Corporation: *See—*
Bokros, Jack C., 3,783,868.
Gulf Research & Development Company: *See—*
Kobylinski, Tadeusz P.; and Taylor, Brian W., 3,784,675.
Guliotta, Donald R., to Warner & Swasey Company, The. Machine tool. 3,783,719, Cl. 82-21.00b.
Gunkel, Walter A.: *See—*
Jackson, Jerry L., 3,783,679.
Gural, John A., to General Motors Corporation. Fuel injection system. 3,783,844, Cl. 123-52.0mv.
Gustus, C. Douglas, to Honeywell Inc. Condition responsive circuit with capacitive differential voltage. 3,784,843, Cl. 307-117.000.
Gutkowski, Robert F.: *See—*
Dworkin, Howard J.; and Gutkowski, Robert F., 3,784,453.
Guyer, Reynolds W., Jr.; d/b/a Winsor Concepts: *See—*
Cross, Norton M., Jr., 3,784,205.
Haas, George C., to Sperry Rand Corporation. Linear frequency to voltage converter circuit. 3,784,845, Cl. 307-233.000.
Habeck, Dietmar A.; and Houlihan, William J., to Sandoz-Wander, Inc. 3-Substituted phenyl-quinazoline-4(3H)-ones as sedative hypnotics. 3,784,693, Cl. 424-250.000.
Habermeier, Juergen: *See—*
Baumann, Dieter; and Habermeier, Juergen, 3,784,525.
Hackbarth, Lowell E.; and Crockett, Joseph T., to Huber, J. M., Corporation. Alkali metal alumino silicates, methods for their production and compositions thereof. 3,784,442, Cl. 162-181.00c.
Hadam, Wilhelm; and Goller, Ernst, to Stoll, H., & Company. Method and apparatus for data transmission in knitting machines. 3,783,642, Cl. 66-75.00r.
Hadfield, Robert W.; and Harding, William H., to Textron, Inc. Underfloor boxes. 3,784,042, Cl. 220-3.300.
Haerick, Jan Armand, to Em. D'Hooge N. V. Locking device for washing machine drums. 3,783,653, Cl. 68-145.000.

Hagiwara, Isamu; and Okamura, Shiro. Apparatus and method for transmitting and receiving signals based upon half cycles. 3,784,754, Cl. 179a15.55r.

Hagopian, Nubar D.: *See*—
Sauer, Harold S.; Hagopian, Nubar D.; and Colman, John M., 3,783,859.

Haight, William John; and Critchley, John Edward, to Bell Canada-Northern Electric Research, Limited. Telephone substation apparatus. 3,784,759, Cl. 179-84.0vf.

Halbach & Braun: *See*—
Braun, Gert; and Braun, Ernst, 3,784,258.

Hall, Albert M.: *See*—
Masson, James C.; and Hall, Albert M., 3,784,512.

Hall, James A., to General Electric Company. Microwave power amplifier. 3,784,926, Cl. 330-53.000.

Hall, James M.: *See*—
Bancroft, James R.; Cleavinger, Richard L.; and Hall, James M., 3,784,829.

Hall, Marcus A.: *See*—
Kenworthy, Samuel P.; and Hall, Marcus A., 3,784,119.

Hallam, Wilfred Laurence: *See*—
Hamilton, Ross Lynton; and Hallam, Wilfred Laurence, 3,783,477.

Halliburton Company: *See*—
Copland, George V., 3,784,740.

Hallmark Cards, Incorporated: *See*—
Greenwood, Aaron O.; Magee, Ramon J.; and Otto, Stanley W., 3,783,779.

Hamashige, Carl H. Driver's communicating signal lights for accelerating, braking and turning operations. 3,784,974, Cl. 340-67.000.

Hamel GmbH, Zwirnmaschinen: *See*—
Greive, Aloys; and Treus, Aloys, 3,783,597.

Hamilton, Douglas, to Elevator Safety Company. Stop control for elevators. 3,783,978, Cl. 187-73.000.

Hamilton, Ross Lynton; and Hallam, Wilfred Laurence. Snap fastener. 3,783,477, Cl. 24-213.0cs.

Hamilton, William F., II. Detector circuit with automatic sensitivity control and post detection filtering for touch control circuitry. 3,784,848, Cl. 307-308.000.

Hamisch, Paul H., Sr., to Monarch Marking System Company, The. Method of making web of record members. 3,783,783, Cl. 101-226.000.

Hamma, Noritaka: *See*—
Eukumaru, Toshitsugu; Hamma, Noritaka; Nakatani, Hiroshi; Fukushima, Hideaki; and Toki, Katsuyuki, 3,784,577.

Hammann, Ingeborg: *See*—
Schrader, Gerhard; and Hammann, Ingeborg, 3,784,653.

Hammelmann, Paul. Movement of a working station with reference to a substantially vertical surface. 3,783,819, Cl. 118-4.000.

Hanciulescu, Valentin: *See*—
Coanda, Henry; Aldea, Gheorghe; Bodea, Ion; Truica, Vasile; Hanciulescu, Valentin; Posirca, Radu; Lazar, Cristian; and Gabor, Iacob, 3,784,325.

Hanert, John A.; and Seversen, Gordon F., to Televiso Electronics, Division of Domain Industries, Inc. Product release control for a vending machine. 3,783,987, Cl. 194-10.000.

Hanks, Fletcher. Apparatus for collecting specimens. 3,783,535, Cl. 37-55.000.

Hanks, Fletcher. Apparatus for collecting biological and/or geological specimens from waterways. 3,783,536, Cl. 37-55.000.

Hannon, Martin John: *See*—
Schaul, Jerome Sandel; Wissbrun, Kurt Falke; and Hannon, Martin John, 3,784,661.

Hansen, Frode Johan, to Redpath Dorman Long (Contracting) Limited. Structure and method and apparatus for founding a structure. 3,783,626, Cl. 61-46.500.

Hansen, Peter D., to Foxboro Company, The. Resistance bulb compensation circuits. 3,783,692, Cl. 73-362.0ar.

Hanssmann, Nils: *See*—
McPherson, Neil Freeman; and Hanssmann, Nils, 3,784,778.

Harder, Arthur J., Jr., to Coach and Car Equipment Corporation. Seat adjusting mechanism. 3,784,147, Cl. 248-371.000.

Harding, William H.: *See*—
Hadfield, Robert W.; and Harding, William H., 3,784,042.

Hardt, David R., to Faustel Incorporated. Revolving turret for supporting printing press cart. 3,783,782, Cl. 101-216.000.

Hardt, Jean, to Aluminium Suisse S.A. Pressurized fluid dispensing devices. 3,784,064, Cl. 222-397.000.

Hardy, Harold Kenyon, to United Kingdom Atomic Energy Authority. Method of extruding material from a particulate mass using a rotating extrusion die. 3,784,660, Cl. 264-88.000.

Harlin, Walter: *See*—
Schneider, Wolfgang; Strohbeck, Gotthilf; Harlin, Walter; Ruckert, Friedrich; and Stahle, Eugen, 3,784,168.

Harmon, Robert W.: *See*—
Davis, John P.; Harmon, Robert W.; and Woom, James T., 3,784,729.

Harnischfeger Corporation: *See*—
Kroll, Joseph G., 3,784,797.

Harradine, Hubert W. Water shoes. 3,783,532, Cl. 36-2.5aa.

Harris, Lee M., to Gould Inc. Self-ejecting electric plug. 3,784,958, Cl. 339-45.00r.

Harris, Ted D., to Universal Machine Company, Inc. Split drive roll and method of forming same. 3,784,120, Cl. 242-18.0dd.

Harrold, Marshall C.: *See*—
Miller, James L.; Wright, Carl J.; and Harrold, Marshall C., 3,783,529.

Harschel, Jonas C. Insert for measuring mixing and dispensing liquids. 3,784,062, Cl. 222-377.000.

Hart, Cullen P.: *See*—
Campbell, John J.; and Hart, Cullen P., 3,783,966.

Hartmann, Rudolf, to Bell & Howell Co. Nodal slide rangefinder. 3,784,305, Cl. 356-3.000.

Hartung, Charles A., to Kennecott Copper Corporation. Gas cooler and atomizing spray nozzle thereof. 3,784,104, Cl. 239-102.000.

Hartzell, Lyndon G.; and Ollinger, James C., to Armstrong Cork Company. Spacer for a fire-rated air bar. 3,783,771, Cl. 98-400.000.

Haruyama, Kunio: *See*—
Sekiguchi, Hideto; Matsumura, Yasuo; Arai, Kojiro; Haruyama, Kunio; and Wakitani, Mitsuru, 3,784,666.

Harwell, Roger J.: *See*—
Krupnick, Albert C.; Key, Carlo F.; and Harwell, Roger J., 3,784,499.

Haskell, Theodore H.: *See*—
Culbertson, Townley P.; and Haskell, Theodore H., 3,784,541.

Hasket, Philip R.: *See*—
Elges, Carl H., III; Hasket, Philip R.; Bauer, Donald J.; and Lindstrom, Roald E., 3,784,669.

Hass, David P.; and Kunz, John E., to Eaton Corporation. Safety apparatus. 3,784,223, Cl. 280-150.0ab.

Hastrup, Niels Erik, 1/2 to Smidth, F. L., & Co. and 1/2 to Aktieselskabet Niro Atomizer. Method of and apparatus for burning cement including atomizing dryer in cyclone preheater bypass. 3,784,389, Cl. 106-100.000.

Hatanaka, Yoshihiro; Shigemori, Hideto; and Ueba, Akio, to Kabushiki Kaisha Kokuei Kikai Seisakusho. Automatic money-issuing apparatus. 3,784,790, Cl. 235-61.70b.

Haubein, Harold Denis, to Chance, A. B., Company. Tamper resistant, lockable enclosure apparatus for transformers and the like. 3,784,727, Cl. 174-52.00r.

Haun, Clem Edward: *See*—
Newman, Albert P.; and Haun, Clem Edward, 3,784,964.

Hauni Werke Koerber and Co. K.G.: *See*—
Lakos, Georg, 3,783,881.

Hauni-Werke Korber & Cie KG: *See*—
Heitmann, Owe; and Grasse, Hans Jochen, 3,783,677.

Hauser, Raimund: *See*—
Muszumanski, Trude; and Gela, Helmut, 3,784,283.
Schild, Josef; and Wessner, Harald, 3,783,761.

Hautly, Harry B.; and Echols, Samuel T., Jr., to Buttermist, Inc. Popcorn flavoring and dispensing apparatus. 3,783,820, Cl. 118-19.000.

Hawk, Bob R., to Loma Corporation. Container with bag-liner locking rim. 3,784,049, Cl. 220-63.000.

Hayashi, Keizo, to Nippon Oils and Fats Company Limited. Electric detonator free from accidental electrostatic firing. 3,783,788, Cl. 102-28.00r.

Hayashibara Biochemical Laboratories, Incorporated: *See*—
Hijiya, Hiromi; and Shiosaka, Makoto, 3,784,390.

Hayati, Hossein: *See*—
Lerner, Robert Wendell; Hayati, Hossein; and Flasch, John Robert, 3,784,505.

Hayes, Barry James: *See*—
Garnish, Edward William; and Hayes, Barry James, 3,784,433.

Hayes, Donald A., to Schlumberger Technology Corporation. Determining the location of vertical channels in a wellbore. 3,784,828, Cl. 250-260.000.

Hayward Foundation, The: *See*—
Bagshawe, Kenneth D.; and Marchant, Derek N., 3,784,826.

Hazard, Robert E., to Polytop Corporation. Child resistant deformable closure. 3,784,060, Cl. 222-153.000.

Hazemag Hartzerkleinerungs und Zement-Maschinenbau Gesellschaft mbH: *See*—
Koenig, Rolf; and Hemesath, Gerhard, 3,784,117.

Health-Mor Inc.: *See*—
Fairaizl, Max L.; and Martinec, Eugene F., 3,783,474.

Heaton, Clifford C.: *See*—
Martone, Ronald J.; Goldman, Samuel C.; and Heaton, Clifford C., 3,784,819.

Heckendorn, Roland: *See*—
Gagneux, Vandre; Heckendorn, Roland; and Meier, Rene, 3,784,556.

Hedberg, Frederick L.; and Marvel, Carl S., to United States of America, Air Force. Preparation of polybenzimidazoles in the presence of a sulfone solvent. 3,784,517, Cl. 260-63.00r.

Hedgewick, Peter, to Reflex Corporation of Canada Limited. Roadway marker. 3,784,279, Cl. 350-103.000.

Hedman, Jarl: *See*—
Westerlund, Tage; and Hedman, Jarl, 3,784,032.

Heeman, Andreas Maria: *See*—
Boekkooi, Anton; and Heeman, Andreas Maria, 3,784,807.

Heflinger, Leo O.: *See*—
Wuerker, Ralph F.; and Heflinger, Leo O., 3,784,276.

Heidorn, John H., to General Motors Corporation. Head pressure biased control valve. 3,783,634, Cl. 62-217.000.

Heidorn, John H., to General Motors Corporation. Radial compressor with two-piece cylinder housing and shell. 3,784,331, Cl. 417-269.000.

Heijmeijer, Carolus Lambertus Josephus Antonius Maria, to Verenigde Fabrieken Van L. J. Heijmeijer N.V. Method and apparatus for forming packages of bags made from plastics material. 3,783,750, Cl. 93-32.000.

Heiland, Manfred, to Schenck, Carl, Firma. Closure means for vacuum chambers. 3,783,557, Cl. 49-221.000.

Heinle, Eugen: *See—*
Hirt, Dieter; Gerlich Leonhard; and Heinle, Eugen, 3,783,681.

Heinrichs, Roland P., to Uniwave, Inc. Cleaning and lighting apparatus for knitting machine. 3,783,648, Cl. 66-168.000.

Heitmann, Owe; and Grasse, Hans Jochen, to Hauni-Werke Korber & Cie KG. Method and apparatus for testing cigarettes or like rod-shaped articles. 3,783,677, Cl. 73-41.000.

Heitmann, Wilhelm: *See—*
Ester, Wilhelm; and Heitmann, Wilhelm, 3,784,614.

Heller, Hansjorg: *See—*
Kirchmayr, Rudolf; Heller, Hansjorg; and Rody, Jean, 3,784,569.

Hellerbach, Joseph; and Walser, Armin, to Hoffmann-La Roche Inc. Benzodiazepin-2-ones. 3,784,542, Cl. 260-239.30d.

Helmer, Robert. Propulsion systems using squirrel cage induction motors to operate from an AC or DC source. 3,783,795, Cl. 105-61.000.

Hemesath, Gerhard: *See—*
Koenig, Rolf; and Hemesath, Gerhard, 3,784,117.

Hemgren, Sven Anders, to Dymo Industries, Inc. Frame for exchangeable posters or the like. 3,783,543, Cl. 40-152.000.

Henderson, Samuel R.: *See—*
Billings, Roy O.; and Henderson, Samuel R., 3,783,613.

Hendrickson, G. Vernon; and Hendrickson, Kermit A. Snowmobile running frame and track control. 3,784,263, Cl. 305-22.000.

Hendrickson, Kermit A.: *See—*
Hendrickson, G. Vernon; and Hendrickson, Kermit A., 3,784,263.

Hendrickson, Philip J.; and Resch, Richard J., to Krueger Metal Products, Inc. Chair with foldable tablet arm. 3,784,249, Cl. 297-162.000.

Hentschel, Rainer, to Fishcer & Porter Company. Magnetic flowmeter arrangement. 3,783,686, Cl. 73-194.0em.

Herbert, William; and Kohlhepp, Dean H., to Black Clawson Fibreclaim, Inc., mesne. Waste treatment apparatus. 3,783,993, Cl. 198-140.000.

Herling, Charles A.; and Maizlish, Bernard L. Rotatable golf bag holder. 3,784,138, Cl. 248-96.000.

Herman, Daniel F.: *See—*
Kruse, Uno; and Herman, Daniel F., 3,784,391.

Herrell, Dennis J., to International Business Machines Corporation. Binary adder using josephoson devices. 3,784,854, Cl. 307-212.000.

Hertig, Jean: *See—*
Weber, Hans-Peter; Litzler, Alfred; Hertig, Jean; Milicevic, Branimir; Fuhring, Heinrich; Sieber, Johannes-Helmut; and 042818, 3,783,650.

Herzog, Donald George: *See—*
Joy, Patrick Francis, Jr.; and Herzog, Donald George, 3,784,929.

Herzog, Hershel L.: *See—*
Shapiro, Elliot L.; Teutsch, George J.; and Herzog, Hershel L., 3,784,603.

Hess, Richard L. Single actuator for effecting multiple controls. 3,784,746, Cl. 179-1.0gq.

Hess, Wolfgang, to Girling Limited. Brake pads and wear indicators therefor. 3,783,979, Cl. 188-1.00a.

Hewlett-Packard Company: *See—*
Jackson, Weldon H.; and Lamy, John C., 3,784,937.
Smith, James M.; and Drennan, George A., 3,784,726.

Hickling, Robert: *See—*
Fleck, Lawrence L.; and Hickling, Robert, 3,784,225.

Hickner, Richard A.; and Bredeweg, Corwin J., to Dow Chemical Company, The. Halohydrin thioethers and method of preparation. 3,784,607, Cl. 260-609.00r.

Hicks, Carroll, to Lee, Raymond, Organization, The. Boot jack. 3,784,067, Cl. 223-114.000.

Higgins, Dale G.: *See—*
Macaulay, William R.; Feldhake, Ralph H.; Higgins, Dale G.; and Santa Maria, Richard C., 3,784,414.

Hijimoto, Takehiki; Okada, Masashi; and Inque, Higashiyama, to Sanyo Chemical Industries, Ltd. Process for producing a partially hydrolyzed acrylamide polymer. 3,784,597, Cl. 260-80.30n.

Hijiya, Hiromi; and Shiosaka, Makoto, to Hayashibara Biochemical Laboratories, Incorporated. Shaped bodies of pullulan and their use. 3,784,390, Cl. 106-139.000.

Hilbert, Wolfgang Herman Gustav, to Bunker Ramo Corporation. Cable-termination adapter. 3,784,233, Cl. 285-12.000.

Hilgert, Adolph J., to Johnson Service Company. Electromagnetically driven fluid compressing apparatus. 3,784,334, Cl. 417-415.000.

Hill, Bernard E. Rocker base. 3,784,148, Cl. 248-382.000.

Hill, David C.: *See—*
Barnhart, Bruce R.; and Hill, David C., 3,783,846.

Hill, Kim, to General Motors Corporation. Door lock actuator. 3,784,242, Cl. 292-336.300.

Hill, Vernon J., Jr.; Southam, Earl A.; and McDowell, John R., to Lindsay Wire Weaving Company. Seam for woven paper making fabrics. 3,784,133, Cl. 245-10.000.

Hiller, Georg. Centrifugal separator. 3,784,091, Cl. 233-7.000.

Hilt, Albrecht; Schmidt, Franz; and Schwartz, Erich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Catalyst composition for the production of trioxane polymers. 3,784,519, Cl. 260-67.0fp.

Himmelsbach, Paul, to Schneider, Jos., & Co. Optische Werke. Clock with optically displayed digital time indication. 3,783,603, Cl. 58-50.00r.

Hinerman, Ralph. Tube expansion tool. 3,783,674, Cl. 72-476.000.

Hinman, Charles William: *See—*
Nelson, William Junior; and Hinman, Charles William, 3,784,409.

Hino, Horoyuki; Asakuno, Hiroyoshi; and Yamada, Tetsuya, to Chisso Corporation. Process and apparatus for producing uniaxially stretched articles difficult to split longitudinally. 3,784,662, Cl. 264-95.000.

Hirao, Shoichi; Ihara, Satoshi; and Ulda, Kanji, to Seitetsu Kagaku Co., Ltd. Downcomer for fluid contactor apparatus. 3,784,175, Cl. 261-114.00r.

Hirata, Noritsugu; and Takigawa, Tomishi, to Canon Kabushiki Kaisha. Electromagnetic shutter releasing device for a photographic camera. 3,784,291, Cl. 352-169.000.

Hiroyoshi Hidaka: *See—*
Matsumoto, Ikuo; and Okazawa, Masao, 3,784,632.

Hirsch, Arnold: *See—*
Julian, Percy L.; Hirsch, Arnold; and Iseli, Ernst, 3,784,598.

Hirschler, Daniel A., Jr.; and Marsee, Frederick J., to Ethyl Corporation. Fuel system. 3,783,841, Cl. 123-127.000.

Hirt, Dieter; Gerlich Leonhard; and Heinle, Eugen, to Maschinenfabrik Augsburg. Method and apparatus to monitor quality of a piston in a cylinder. 3,783,681, Cl. 73-119.00r.

Hitachi, Ltd.: *See—*
Kawai, Isamu; Uchida, Tadao; and Ishima, Kenji, 3,784,173.
Miyata, Kenji; and Okamura, Masahiro, 3,784,886.
Motegi, Shoji; Uki, Northiro; and Mito, Sadao, 3,784,855.
Takemoto, Takeo; Yamazaki, Eiichi; Maruyama, Koichi; and Ueda, Toshio, 3,783,754.
Tokuyama, Takashi; and Mori, Takaaki, 3,783,500.
Yamazaki, Eiichi; Maruyama, Koichi; and Ueda, Toshio, 3,784,282.

Ho, Irving T., to International Business Machines Corporation. Monolithic array error detection system. 3,784,976, Cl. 340-146.1ag.

Hoesch AG: *See—*
Gantre, Franz; Zywietz, Walter; Seiz, Rudolf; and Eickhoff, Heinz, 3,783,625.

Hoesch Aktiengesellschaft: *See—*
Angenenot, Jacob Anton, 3,783,575.
Hoffmann, Hans-Jurgen; and Fischer, Friedhelm, 3,784,228.

Hoesch Maschinenfabrik Deutschland AG: *See—*
Kuhne, Wolfgang; and Goletz, Hubert, 3,783,718.

Hoeschele, Guenther Kurt, to Du Pont de Nemours, E. I., and Company. Segmented thermoplastic copolyesters. 3,784,520, Cl. 260-75.00r.

Hoffa, Jack L.: *See—*
Peterson, Arnie J.; and Hoffa, Jack L., 3,784,170.

Hoffman, Louis S.: *See—*
Spruyt, Harry; and Hoffman, Louis S., 3,784,056.

Hoffmann GmbH & Co., KG., Firma: *See—*
Erich, Reinhard; Hoffmann, Hermann; and Muhlbauer, Gerd Rudiger, 3,784,322.

Hoffmann, Hans-Jurgen; and Fischer, Friedhelm, to Hoesch Aktiengesellschaft. Regulating apparatus for a fluid controlled car suspension. 3,784,228, Cl. 280-6.00h.

Hoffmann, Hermann: *See—*
Erich, Reinhard; Hoffmann, Hermann; and Muhlbauer, Gerd Rudiger, 3,784,322.

Hoffmann-La Roche Inc.: *See—*
Cekoric, Thomas, Jr.; and Yananton, Patrick Michael, 3,784,448.
Hellerbach, Joseph; and Walser, Armin, 3,784,542.
Jaffe, Gerald Myer; Szkrybalo, William; and Weinert, Peter Hans, 3,784,408.
Ranucci, Joseph Anthony; and Sheth, Prabhakar Ranchhordas, 3,784,708.

Hoffmuller, Wilhelm: *See—*
Rossmann, Axel; and Hoffmuller, Wilhelm, 3,784,320.

Hogan, John Gabriel. Feeder valves. 3,784,061, Cl. 222-200.000.

Holland Company: *See—*
Chierici, Osvaldo F., 3,784,030.

Holland, Gerald F.; and Lombardino, Joseph G., to Pfizer Inc. Novel 2-aryl-1,3-indandiones and 2-aryl-2,3-dihydrobenz (F) indene-1,3-diones. 3,784,606, Cl. 260-590.000.

Holm, William Z., to Ross-Holm Division Holm Tractor & Equipment Company. Automatic milking barn. 3,783,830, Cl. 119-14.030.

Holmes, Frank; Moore, William A.; and Read, George, to Ajax Hardware Manufacturing Corporation. Drawer and support system. 3,784,274, Cl. 312-330.000.

Holmstrom, Lars Olof, to Siemens Aktiengesellschaft. X-ray device with a stand. 3,784,837, Cl. 250-523.000.

Holovka, John M.; and Hurley, Edward, to Marathon Oil Company. Reactions of halogen-substituted olefins with alkenes and alcohols. 3,784,646, Cl. 260-593.000.

Holstein & Kappert Maschinenfabrik Phonix GmbH: *See—*
Kurtenbach, Willi, 3,783,587.

Holtschmidt, Ulrich: *See—*
Fock, Jurgen; and Holtschmidt, Ulrich, 3,784,436.

Home Metal Products Company: *See—*
Stalker, James E., 3,783,767.

Honeyball, Samuel Walter: *See—*
Burnham, Donald; Honeyball, Samuel Walter; Spooner, Michael; and Lobb, Daniel Richard, 3,784,742.

Honeywell Inc.: *See—*
Gustus, C. Douglas, 3,784,843.
Joesting, Frederick D., 3,783,892.
Honeywell Information Systems, Inc.: *See—*
Markowitz, Ivan N.; and Gray, Darby A., 3,784,943.
Honeywell Information Systems Italia: *See—*
Compare, Giampiero, 3,784,380.
Honjo, Satoru: *See—*
Fukushima, Osamu; Sato, Masamichi; and Honjo, Satoru, 3,783,827.
Hooker Chemical Corporation: *See—*
Wagner, George M., 3,784,356.
Hope, Mary Jarvie: *See—*
Hope, William Ernst; Hope, Mary Jarvie; and McNeil, Thomas William, 3,784,018.
Hope, William Ernst; Hope, Mary Jarvie; and McNeil, Thomas William. Apparatus for the continuous separation of fine particles from liquor. 3,784,018, Cl. 210-393.000.
Hopkins, Ralph E., to United States of America, Army. Method of making a high voltage deposited fuel cell component. 3,784,415, Cl. 136-175.000.
Hopkins, Richard G. Subfloor system for grinding apparatus. 3,784,724, Cl. 174-48.000.
Hopper, Bernard, to Norton Villiers Limited. Loop driven vehicles. 3,783,961, Cl. 180-33.00a.
Horovitz, Zola P.: *See—*
Beer, Bernard; Clody, Donald E.; Vogel, John R.; and Horovitz, Zola P., 3,784,688.
Horton, Edward E., to Deep Oil Technology, Inc. Self-healing electrical connector means. 3,784,959, Cl. 339-60.00m.
Horvath, Eugene A. Building unit. 3,783,571, Cl. 52-575.000.
Hosaka, Akio, to Nissan Motor Company, Limited. Electric power supply system. 3,784,841, Cl. 307-64.000.
Hosiery Mate Company, The: *See—*
Berliner, Julius F. T., 3,784,497.
Hosoi, Susmu: *See—*
Watanabe, Jun; Hosoi, Susmu; Kuwazaki, Masahiro; Ota, Akira; Takata, Toshikatsu; and Asaoka, Junichi, 3,784,413.
Hosono, Hiroo: *See—*
Nagahiro, Michinori; Yabu, Toshiomi; Hosono, Hiroo; and Ushihara, Masaharu, 3,784,128.
Hotchkiss, Robert William. Projectile including a cylindrical body with one flanged end and a target board. 3,784,200, Cl. 273-95.00r.
Hough Manufacturing Corporation: *See—*
Williams, Charles E., 3,783,930.
Houlihan, William J.: *See—*
Habeck, Dietmar A.; and Houlihan, William J., 3,784,693.
Howe, William J., to Georgia-Pacific Corporation. Method of packaging containers in a carton blank. 3,783,579, Cl. 53-24.000.
Hoy, Herbert Raymond; Johnson, Ronald Leslie; and Battcock, Whalley Vowe, to Coal Industry (Patents), Limited. Fluidised bed apparatus. 3,784,108, Cl. 239-264.000.
Hoyland, Trevor, to Thurne Engineering Company Limited. Machine for closing filled bags. 3,783,585, Cl. 53-198.00a.
Hsu, Howard L.: *See—*
Glynn, Emmett P.; and Hsu, Howard L., 3,783,633.
Hubbell, Harvey, Incorporated: *See—*
Gartland, Albert J., Jr., 3,784,961.
Huber, Henry J., to Ikor Incorporated. Apparatus for sensing particulate matter. 3,784,902, Cl. 324-32.000.
Huber, J. M., Corporation: *See—*
Bertorelli, Orlando Leonard, 3,784,392.
Hackbarth, Lowell E.; and Crockett, Joseph T., 3,784,442.
Huber, James A.: *See—*
Stump, Paul W.; Huber, James A.; and Lipinski, John M., 3,783,908.
Huber, Theodor: *See—*
Winkler, Alfred; Pelte, Richard; Huber, Theodor; and Mayr, Helmut, 3,784,292.
Hubers, Cornelis. Expansion engine. 3,783,615, Cl. 60-39.610.
Hudis, Martin, to General Electric Company. Polymer film electret air filter. 3,783,588, Cl. 55-126.000.
Hudson, Frederick W.; and Cranch, John F., to Xerox Corporation. Pre-transfer station. 3,784,300, Cl. 355-3.000.
Hudson Pulp & Paper Corporation: *See—*
Kilgore, William E., 3,784,085.
Hughes Aircraft Company: *See—*
Castro, Rodolfo; Toscano, Esteban J.; and Siosca, Felix Jerome, 3,784,183.
Hughes, Harry Elroy, Jr.; and Wachs, Meyer Herbert, to Bell Telephone Laboratories, Incorporated. Semiconductor device fabrication using magnetic carrier. 3,783,499, Cl. 29-574.000.
Hughes, John K. Building construction and components thereof. 3,783,565, Cl. 52-127.000.
Hughes, Thomas R., to Chevron Research Company. Hydrocarbon conversion. 3,784,622, Cl. 260-676.00r.
Hulettis Sugar Corporation Limited: *See—*
Van Hengel, Anthonie, 3,784,450.
Hults, Arthur E. Seat belt system. 3,784,972, Cl. 340-52.00e.
Huml, James O.: *See—*
Bangs, Leigh B.; Huml, James O.; and Layne, Gilbert S., 3,784,371.
Hummel, Adam: *See—*
Wagner, Karl; Rosenberg, Otto; and Hummel, Adam, 3,783,757.
Hunt, Gardner S.: *See—*
Baumann, Robert F.; Bozza, Eugene F.; and Hunt, Gardner S., 3,784,419.
Hunt, Theodore R., to Data Time, Inc. Submersible touch-operated signaler with water drainage passages. 3,784,768, Cl. 200-52.00r.
Hunter, Skillman C.: *See—*
Norman, Leslie W.; Hunter, Skillman C.; and Russell, George A., 3,783,616.
Huntrup, Antonius: *See—*
Konig, Karl-Heinz; and Huntrup, Antonius, 3,783,533.
Hurko, Bohdan; and Dills, Raymond L., to General Electric Company. Flow-through self-cleaning gas oven with heat exchanger. 3,783,854, Cl. 126-21.00r.
Hurley, Edward: *See—*
Holovka, John M.; and Hurley, Edward, 3,784,646.
Hurlock, Arthur C., to Ex-Cell-O Corporation. Non-returnable container case. 3,784,082, Cl. 229-30.000.
Hurwitz, Mathew. Mixing and comminuting apparatus. 3,784,118, Cl. 241-282.100.
Husa, Howard W.; and Ginsburgh, Irwin, to Standard Oil Company (Indiana). Method for safely collecting hydrocarbon vapors present during loading or unloading of flammable fuels. 3,783,911, Cl. 141-11.000.
Hutchinson, Herman R.; Arpajian, Vasken F.; and Malcomson, Robert S., to Pennwalt Corporation. Time monitored process for controlling injection molding cycle. 3,784,657, Cl. 264-40.000.
Hydraulics Unlimited Mfg. Co.: *See—*
Channell, Glenn L.; Fuller, Blaine W.; and Davisson, Kenneth R., 3,784,162.
Hydril Company: *See—*
Mott, James D., 3,783,942.
Hydrotech International, Inc.: *See—*
Mohr, Harvey O., 3,784,234.
I. V. Pressure Controllers Limited: *See—*
Kirkman, Douglas Frederick, 3,783,898.
I-T-E Imperial Corporation: *See—*
Gryctko, Carl E., 3,784,775.
Wilson, George A., 3,784,764.
Wilson, George A., 3,784,774.
Iadipaolo, Rene M., to General Motors Corporation. Circuit indicating change and steady state of a DC signal. 3,784,921, Cl. 328-135.000.
Iaru, Napoleon: *See—*
Casapopol, Gherasim; and Iaru, Napoleon, 3,783,560.
ICI America Inc.: *See—*
Rutledge, Thomas F., 3,784,575.
Ide, Toshio: *See—*
Niitu, Moritada; and Ide, Toshio, 3,784,031.
Idel, Vladimir Viktorovich. Band saw grinder. 3,783,714, Cl. 76-37.000.
Ihara, Satoshi: *See—*
Hirao, Shoichi; Ihara, Satoshi; and Ulda, Kanji, 3,784,175.
Ihara, Yasuharu, to Nippon Gakki Seizo Kabushiki Kaisha. Wind-type musical instrument. 3,783,732, Cl. 84-385.000.
Ikebe, Yo: *See—*
Inaba, Seiuemon; Ikebe, Yo; and Yamamura, Sakae, 3,784,850.
Ikor Incorporated: *See—*
Huber, Henry J., 3,784,902.
Illinois Tool Works Inc.: *See—*
Edwards, Bryant, 3,784,052.
Klygis, Mindaugas Julius, 3,784,246.
Marco, Leslie Stephan, 3,784,039.
Owen, Ronald Charles, 3,784,002.
Wagner, David P., 3,783,921.
Ilvespaa, Atso, to Ciba-Geigy Corporation. 4-N-(5-nitro-2-thiazolyl)-formimidoylthiomorpholines and oxides. 3,784,543, Cl. 260-240.00g.
Imai, Masataro; Ishizawa, Hiroshi; and Kanbayashi, to Shinko Electric Co., Ltd. Inventory control device. 3,784,802, Cl. 235-168.000.
Imai, Shinichiro: *See—*
Ito, Katsunori; and Imai, Shinichiro, 3,784,793.
Imperial Chemical Industries Limited: *See—*
Craig, William Allan, 3,784,421.
Feasey, Ronald George, 3,784,504.
Fielding, Brian Grosble, 3,784,355.
Garner, Paul Johnson; and Collins, Thomas Robert Stephen, 3,784,152.
Garner, Paul Johnson, 3,784,451.
Sharpe, Stuart Peter; and Snell, Brian Kenneth, 3,784,546.
Imperial Damper Co., Inc.: *See—*
Caming, Lionel P.; and Fromwiller, Frank J., 3,783,768.
Imperial Oil Limited: *See—*
Kaminsky, Victor Paul, 3,784,464.
Inaba, Seiuemon; Ikebe, Yo; and Yamamura, Sakae, to Fujitsu Limited. Electric pulse motor. 3,784,850, Cl. 310-49.000.
Inamoto, Yoshiaki; and Kadono, Takeji, to Kao Soap Co. Ltd. Tertiary phosphoric esters of tricyclic aliphatic alcohols. 3,784,651, Cl. 260-956.000.
Industrial Dynamics Company, Ltd.: *See—*
Calhoun, Fredrick L., 3,784,827.
Industrial Electronic Rubber Company: *See—*
Murray, Myles N., 3,784,952.
Industrie Pirelli S.p.A.: *See—*
Previati, Augusto, 3,784,338.
Information Flow Incorporated; in care of Ocean & Atmospheric Science, Inc.: *See—*

Woolf, Julius Isadore; Sadowy, Roman, Jr.; and Gershman, Russell John, 3,784,757.
Ingersoll Machine and Tool Company Limited: *See—*
Goodman, Derek J.; and Farr, Gerald N., 3,783,639.
Ingersoll-Rand Company: *See—*
Alford, Raymond N.; and Race, Hugh A., 3,783,747.
Inland Steel Company: *See—*
Sievert, William C.; CArter, William A.; and Munson, James L., 3,783,823.
Inmont Corporation: *See—*
Sonn, George Frank; and McGonigle, Frank Michael, 3,784,393.
Innes, William B.; Michael, Malden W.; and Adler, Stephen F., to American Cyanamid Company. Activity and strength properties of reforming catalysts by aluminum chloride leaching. 3,784,484, Cl. 252-442.000.
Innovatex Corporation: *See—*
Voitik, Robert M., 3,784,213.
Ino, Yoichi: *See—*
Sakai, Tadashi; Sakimura, Masahiko; and Ino, Yoichi, 3,784,814.
Inoue, Masayoshi: *See—*
Suzuki, Takenobu; Nagashima, Buemon; Inoue, Masayoshi; and Ito, Yoji, 3,784,904.
Inque, Higashiyama: *See—*
Hijimoto, Takehiki; Okada, Masashi; and Inque, Higashiyama, 3,784,597.
Institut Francais du Petrole, des Carburants et Lubrifiants: *See—*
Lassau, Christian; Stern, Robert; and Sajus, Lucien, 3,784,481.
Institutul de Cercetare si Proiectare Tehnologica Pentru Industria Extractiva de Titei si Gaza: *See—*
Coanda, Henry; Aldea, Gheorghe; Bodea, Ion; Truica, Vasile; Hanciulescu, Valentin; Posirca, Radu; Lazar, Cristian; and Gabor, Iacob, 3,784,325.
Instytut Metalurgii Zelaza: *See—*
Prajsnar, Tadeusz; Rulinski, Jozef; Zglobicki, Edward; and Sojka, Bronislaw, 3,783,663.
International Business Machines Corporation: *See—*
Carter, William C.; and Wadia, Aspi B., 3,784,977.
Crawford, Roy P., 3,784,190.
Fichelberger, Edward Baxter, 3,784,907.
Herrell, Dennis J., 3,784,854.
Ho, Irving T., 3,784,976.
International Harvester Company: *See—*
Watt, J. Donald; and Molzahn, Herbert W., 3,783,594.
International Paper Company, mesne: *See—*
Lenthall, Robert; Mills, Don; and Lee, Charles A., 3,784,186.
International Standard Electric Corporation: *See—*
Klein, Dagobert; and Schneider, Gunter, 3,784,936.
International Telephone and Telegraph Corporation: *See—*
Karchmar, Arthur, 3,784,480.
Marks, John L., 3,783,726.
Orthuber, Richard Kaspar, 3,784,379.
Reif, Philip George, 3,784,831.
International Vibration Engineering: *See—*
Pelat, Patrice, 3,783,738.
Intreprinderea Judetana de Morarit si Panificatie: *See—*
Casapopol, Gherasim; and Iaru, Napoleon, 3,783,560.
Inventio AG: *See—*
Voser, Albert, 3,783,977.
Inventio Aktiengesellschaft: *See—*
Grimm, Hans-Ueli; Zufferey, Daniel; and Messina, Antonio, 3,784,954.
Iowa State University Research Foundation, Inc.: *See—*
Young, Jerry W., 3,784,707.
Ireco Chemicals: *See—*
Murphy, Charles H.; and Udy, Lex L., 3,783,735.
Thornley, Gary M.; and Stokes, Robert C., 3,783,787.
Ironside, Donald S., to Biddle, James G., Company. Bridge having multiple nulls. 3,784,906, Cl. 324-62.000.
Irvin Industries Inc.: *See—*
Peeler, Donald H., 3,784,224.
Isard, Arsene; and Weiss, Francis, to Ugine Kuhlmann. Method for producing derivatives of 6-hydroxy caproic acid. 3,784,567, Cl. 260-488.00f.
Iseli, Ernst: *See—*
Julian, Percy L.; Hirsch, Arnold; and Iseli, Ernst, 3,784,598.
Ishihara Sangyo Kaisha, Ltd.: *See—*
Yamada, Shigeki; Miyazawa, Kokichi; Naka, Hideaki; and Yoshida, Yoshio, 3,784,670.
Ishikura, Jun: *See—*
Yoshino, Takachika; Saito, Shigeru; Sobukawa, Masukuni; Nagase, Isao; Niikura, Masao; Ishikura, Jun; and Sasaki, Yutaka, 3,784,560.
Ishima, Kenji: *See—*
Kawai, Isamu; Uchida, Tadao; and Ishima, Kenji, 3,784,173.
Ishizawa, Hiroshi: *See—*
Imai, Masataro; Ishizawa, Hiroshi; and Kanbayashi, 3,784,802.
Isotec Incorporated: *See—*
Schlang, Arthur, 3,784,982.
Ito, Katsunori; and Imai, Shinichiro, to Nippondenso Co., Ltd. Card reader device. 3,784,793, Cl. 235-61.11d.
Ito, Yoichiro: *See—*
Tanimura, Takenori; and Ito, Yoichiro, 3,784,467.
Ito, Yoji: *See—*
Suzuki, Takenobu; Nagashima, Buemon; Inoue, Masayoshi; and Ito, Yoji, 3,784,904.
Ito, Yoshio; Katayama, Hajime; Nitanda, Hiroshi; and Yamaguchi, Masaru, to Canon Kabushiki Kaisha. Photocopying machine. 3,784,297, Cl. 355-3.000.
ITT Industries, Inc.: *See—*
Burgdorf, Jochen, 3,783,981.
Kallmeyer, Werner, 3,783,980.
Knapp, Wilhelm; and Ohmayer, Siegfried, 3,783,984.
Ivanov, Vyacheslav Ivanovich: *See—*
Mamin, Evgeny Borisovich; Makarov, Viktor Alexeevich; Korneeva, Calina Petrovna; Poppel, Boris Safronovich; and Ivanov, Vyacheslav Ivanovich, 3,784,825.
Ivey, John Saxon, to Borg-Warner Limited. Method of making a fluid coupling member. 3,783,483, Cl. 29-156.8fc.
Iwama, Masakuni; Fujiwara, Mitsuto; Kojima, Tamotsu; and Yamaoto, Toshihiko, to Konishiroku Photo Industry Company, Ltd. Light sensitive silver halide color photographic material. 3,784,383, Cl. 96-100.000.
Iwasa, Toshio: *See—*
Yamamoto, Katsuo; Sato, Hideo; Iwasa, Toshio; Nakamura, Hisao; and Adachi, Katsuhiro, 3,783,649.
Iwasaki, Shigeo, to Mitsuishi Fukai Tekkosho, Ltd. Brick press with means for withdrawing air from brick raw material. 3,784,343, Cl. 425-352.000.
Izumisawa, Masato: *See—*
Shinkai, Kinya; Ahe, Yoshitaka; and Izumisawa, Masato, 3,784,868.
Izuo, Ryuji: *See—*
Mizutani, Yukio; Sata, Toshikatsu; Izuo, Ryuji; and Yamane, Reiichi, 3,784,457.
Jaatinen, Per Arno: *See—*
Kerttula, Into Isak; and Jaatinen, Per Arno, 3,784,340.
Jackson, G. C., Jr., to Dresser Industries, Inc. Earth boring bit bearing system having a pitted bearing surface. 3,784,264, Cl. 308-8.200.
Jackson, Jerry L., to Gunkel, Walter A. Time base measurement circuit. 3,783,679, Cl. 73-67.700.
Jackson, John; and Bradshaw, Robert Fagan Donat, to U.S. Philips Corporation. Methods and apparatus for determining the relative amount of substance present in a transparent medium. 3,784,307, Cl. 356-51.000.
Jackson, Paul L., to Ford Motor Company. Device for determining the activity of oxygen in molten metal. 3,784,459, Cl. 204-195.00s.
Jackson, Weldon H.; and Lamy, John C., to Hewlett-Packard Company. Blocking capacitor for a thin-film RF transmission line. 3,784,937, Cl. 333-84.00m.
Jacobellis, Alphonse A., to Greer Hydraulic, Inc. Rotary actuator. 3,783,746, Cl. 92-121.000.
Jacobs, Harvey Barry. Weighted surgical clamp having foldable prop. 3,783,873, Cl. 128-303.00r.
Jacquemard, Raymond, to Compteurs-Schlumberger. Valve mechanism for throttling a flowing fluid. 3,783,896, Cl. 137-630.140.
Jacuzzi Bros. Incorporated: *See—*
Woell, Fred T., Jr., 3,784,321.
Jaehnig, James Herbert: *See—*
Dahlstrom, Robert Victor; and Jaehnig, James Herbert, 3,784,445.
Jaffe, Gerald Myer; Szkrybalo, William; and Weinert, Peter Hans, to Hoffmann-La Roche Inc. Process for producing xylose. 3,784,408, Cl. 127-37.000.
Jagid, Bruce E.: *See—*
Rosansky, Martin G.; and Jagid, Bruce E., 3,783,666.
James, Dean B.; Smiley, Seymour H.; and Whittaker, Ralph E., Jr., to Atlantic Richfield Company, mesne. Radio-luminescent sighting arrangement. 3,784,817, Cl. 250-71.00r.
James, Donald N., to Ball Brothers Research Corporation. Scan deflection circuit device. 3,784,872, Cl. 315-27.0td.
Jankowski, Matthew A.; and Donahue, Simeon J., to American Chain & Cable Company, Inc. Set-point assembly with spiral resistor to reduce resistor wear. 3,784,949, Cl. 335-196.000.
Janome Sewing Machine Co., Ltd.: *See—*
Nakada, Tetuo; Ooyama, Noboru; and Miyazkaki, Kenichi, 3,783,778.
Jaspers, Hendrik Alphons: *See—*
Meijer, Roelf Jan; and Jaspers, Hendrik Alphons, 3,783,745.
Jassman, Gerald R., to GTE Automatic Electric Laboratories, Incorporated. Programmable electrical connector. 3,784,956, Cl. 339-18.00r.
Jaszczak, Ronald J., to Searle, G. D., & Co. Scintillation camera with improved resolution. 3,784,821, Cl. 250-368.000.
Jayaraman, Ponnusami: *See—*
Desai, Nalin Binduprasad; Jayaraman, Ponnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, 3,784,559.
Jefferies, Patrick J.; and Crounse, Nathan N., to Sterling Drug Inc. Water-soluble quaternary ammonium phthalocyanine dyestuffs. 3,784,599, Cl. 260-242.000.
Jefferson Chemical Company, Inc.: *See—*
Cavitt, Stanley Bruce, 3,784,482.
Jeffrey Galion Inc., mesne: *See—*
Munger, Fay E.; Fife, Warren E.; and Paolini, Alfred P., 3,784,259.

Jellinek, Karl; Post, Udo; Gieben, Wibmar Uber; and Oellig, Rudi, to Rutgerswerke Aktiengesellschaft. Process for the production of molded articles or coating from polyadducts by reaction of polyethers with polyisocyanates. 3,784,601, Cl. 260-77.5ap.
Jenaer Glaswerk Schott & Gen.: *See*—
Sack, Werner, 3,784,387.
Jennings, Robert R.; and Thornton, William M., 1/2 to Dow Chemical Company, The and 1/2 to Marathon Oil Company. Process for the recovery of oil. 3,783,944, Cl. 166-274.000.
Jenny, Erwin F.; and Schenker, Karl. 1-Amine-cyclobutene. 3,784,642, Cl. 260-558.00a.
Jenny, Walter: *See*—
Desai, Nalin Binduprasad; Jayaraman, Ponnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, 3,784,559.
Peter, Richard; and Jenny, Walter, 3,784,558.
Jensen, Herman George, to Seeburg Corporation, The. Escrow and security device for coin and dollar bill operated vending machine. 3,783,989, Cl. 194-4.00g.
Jentzsch, Dietrich: *See*—
Otte, Eginhart; and Jentzsch, Dietrich, 3,783,694.
Jesse, William L.: *See*—
Sabatelli, Leo C.; and Jesse, William L., 3,784,804.
Jilbert, Phillip Harvey, to National Research Development Corporation. Direct current amplifiers. 3,784,920, Cl. 328-127.000.
Jo-Line Tools, Inc.: *See*—
Trimble, Lester B.; and Sopinski, Zygmunt J., 3,783,703.
Joerchel, Egon; and Kohlhaas, Rudolf, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the recovery of antimony pentachloride from catalyst solutions. 3,784,671, Cl. 423-88.000.
Joesting, Frederick D., to Honeywell Inc. Long timing, slow flow device. 3,783,892, Cl. 137-493.000.
Joh, Seiji: *See*—
Makino, Katsuo; Joh, Seiji; and Takeda, Kouzou, 3,783,818.
Johns-Manville Corporation: *See*—
Arno, David Michael; and Mohr, John Gilbert, 3,784,121.
Johnson, Charles F.: *See*—
Fowler, John H.; and Johnson, Charles F., 3,783,899.
Johnson, Coyote, to Atkins & Merrill, Incorporated. Map display system. 3,783,542, Cl. 40-132.00r.
Johnson, James E. Push pull exerciser with spring resistance. 3,784,195, Cl. 272-83.00r.
Johnson, Joseph H.: *See*—
Duncan, David M.; and Johnson, Joseph H., 3,784,883.
Johnson, Marlyn D.: *See*—
Pfaffendorf, James L.; and Johnson, Marlyn D., 3,784,083.
Johnson, Norman F.; and Smith, Elmer R., to United States of America, Navy. Positive lock toggle guard. 3,784,766, Cl. 200-42.00t.
Johnson, Ronald Leslie: *See*—
Hoy, Herbert Raymond; Johnson, Ronald Leslie; and Battcock, Whalley Vowe, 3,784,108.
Johnson Service Company: *See*—
Hilgert, Adolph J., 3,784,334.
Johnson, Verne E. Siphon. 3,783,888, Cl. 137-145.000.
Johnston, Samuel A.; Lyons, John G.; and Riedmayer, Henry J., to Bunker-Ramo Corporation, The. Integrated circuit package of unified structure with variable resistor. 3,784,948, Cl. 338-183.000.
Jones, Frank O., Jr.: *See*—
Murphy, Robert P.; and Jones, Frank O., Jr., 3,783,683.
Jones, Henry E.: *See*—
Bunn, Dorrance P., Jr.; and Jones, Henry E., 3,784,360.
Jones, Robert G.: *See*—
Killen, Richard J.; and Jones, Robert G., 3,783,777.
Jones, Robert J. Carpenter's tool. 3,783,518, Cl. 33-75.00r.
Jono, Kumiko: *See*—
Yamano, Togo; Jono, Kumiko; Sato, Shigehiko; and Nakanishi, Michio, 3,784,699.
Jonsson, Einn Lennart: *See*—
Von Platen, Baltzar; Jonsson, Einn Lennart; and Trolle, Sten, 3,783,775.
Jorgensen, Ray B.: *See*—
Nicholson, Thomas W.; Jorgensen, Ray B.; and Vanek, Stanley Donald, 3,783,916.
Joy, Patrick Francis, Jr.; and Herzog, Donald George, to RCA Corporation. Thermally-controlled crystalline lasers. 3,784,929, Cl. 331-94.500.
Ju, Fred: *See*—
Richardson, John Lloyd; Segovia, Gilbert; Ju, Fred; and Bachle, Wilfred Hugo, 3,784,470.
Jubenville, Arthur R. Trailer anti-fishtail acceleration responsive switch assembly with actuator magnetic holding structure. 3,784,773, Cl. 200-61.45m.
Julian, Percy L.; Hirsch, Arnold; and Iseli, Ernst, to Ciba Corporation. Process for the conversion of a 3-hydroxy-5,6-oxide-group of a steroid into a delta 4-3-oxo group. 3,784,598, Cl. 260-239.55d.
Just, George E.: *See*—
Just, George E.; and Simonovitch, Chaim (said Simonovitch assor. to said), 3,784,636.
Just, George E.; and Simonovitch, Chaim, said Simonovitch assor. to said Just, George E. Process for producing prostaglandins. 3,784,636, Cl. 260-468.00d.
Just, George F.: *See*—
Just, George F.; and Simonovitch, Chaim (said Simonovitch assor. to said), 3,784,634.
Just, George F.; and Simonovitch, Chaim, said Simonovitch assor. to said Just, George F. Process for producing prostaglandins. 3,784,634, Cl. 260-468.00d.
Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft: *See*—
Griesinger, Wolfram, 3,783,497.
Kabushiki Kaisha: *See*—
Miyazawa, Hideichi, 3,783,608.
Kabushiki Kaisha Kokuei Kikai Seisakusho: *See*—
Hatanaka, Yoshihiro; Shigemori, Hideto; and Ueba, Akio, 3,784,790.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Kaizaki, Hiroyuki; and Kato, Takeshi, 3,784,262.
Kabushiki Kaisha Ricoh: *See*—
Ogawa, Kiyoshi; Yokoyama, Yoshiaki; and Fukushima, Yoshio, 3,783,706.
Kabushiki Kaisha Takenaka: *See*—
Nakade, Sadao; Kubota, Hirosuke; Oshita, Toshiyuki; and Sakane, Kuniyoshi, 3,783,624.
Kadono, Takeji: *See*—
Inamoto, Yoshiaki; and Kadono, Takeji, 3,784,651.
Kaempen, Charles E., to Kaempen Industries, Inc. Composite structure. 3,784,441, Cl. 161-58.000.
Kaempen Industries, Inc.: *See*—
Kaempen, Charles E., 3,784,441.
Kaiser, Francis T.; and Schanen, Robert R., to Modern Equipment Company. Vibratory furnace charging apparatuses. 3,784,033, Cl. 214-19.000.
Kaiser, Robert, to Avco Corporation. Solid additives dispersed in perfluorinated liquids with perfluoroalkyl ether dispersants. 3,784,471, Cl. 252-21.000.
Kaizaki, Hiroyuki; and Kato, Takeshi, to Kabushiki Kaisha Komatsu Seisakusho. Device for interconnecting track shoes of a crawler. 3,784,262, Cl. 305-11.000.
Kallmeyer, Werner, to ITT Industries, Inc. Brake lining holding arrangement for spot-type disc brakes. 3,783,980, Cl. 188-73.500.
Kalopissis, Gregoire; Bouillon, Claude; Manoussos, Georges; and Berrebi, Claudine, to Societe Anonyme dite: L'Oreal. Cosmetic compositions to reduce greasy appearance of the hair and skin. 3,784,685, Cl. 424-70.000.
Kaman Aerospace Corporation: *See*—
Flannelly, William G., 3,784,363.
Kaminski, William: *See*—
Brown, Earl Franklin; and Kaminski, William, 3,784,735.
Kaminsky, Victor Paul, 30% to Canada Cities Service, Ltd., 30% to Imperial Oil Limited, 30% to Atlantic Richfield Canada Ltd. and 10% to Gulf Oil Canada Limited. Process for washing secondary separator froth to recover bitumen. 3,784,464, Cl. 208-11.000.
Kanagawa Kiki Kogyo Company, Ltd.: *See*—
Akiyama, Jiro, 3,784,016.
Kanayama, Mitsutoshi; and Toda, Takao, to Canon Kabushiki Kaisha. Roll duplicator. 3,784,298, Cl. 355-109.000.
Kanbayashi: *See*—
Imai, Masataro; Ishizawa, Hiroshi; and Kanbayashi, 3,784,802.
Kane, William P., to Du Pont de Nemours, E. I., and Company. Surface treated cheese package and method. 3,784,711, Cl. 426-130.000.
Kao Soap Co. Ltd.: *See*—
Inamoto, Yoshiaki; and Kadono, Takeji, 3,784,651.
Kaplan, Morton: *See*—
Colten, Frank P.; and Kaplan, Morton, 3,784,713.
Karchmar, Arthur, to International Telephone and Telegraph Corporation. Cedar polyphenols and thiodipropionic acid as anti-oxidants for use in animal fats and vegetable oils. 3,784,480, Cl. 252-404.000.
Karklys, Joseph, to Whirlpool Corporation. Digital logic control for automatic washer. 3,783,651, Cl. 68-12.00r.
Karlskronavarvet AB: *See*—
Ramstrom, Sven, 3,784,911.
Karmann, Thomas R.; and Adams, Alton A., to Valmont Industries Inc. Apparatus for and welding of tapered pipe. 3,784,081, Cl. 228-17.000.
Karp, Stewart: *See*—
Lowell, Seymour; and Karp, Stewart, 3,783,697.
Kartschmaroff, Peter; Moser, Paul; and Berger, Kurt, to Ciba-Geigy Corporation. Nickel pyrolysate stabilizers for olefin polymers. 3,784,510, Cl. 260-45.75n.
Kason Hardware Corporation: *See*—
Berkowitz, Irving L., 3,784,240.
Kasten, Walter, to Bendix Corporation, The. Filter. 3,784,015, Cl. 210-322.000.
Kataoka, Hiroshi. Sheet rewinder. 3,784,122, Cl. 242-56.00a.
Katayama, Hajir..e: *See*—
Ito, Yoshio; Katayama, Hajime; Nitanda, Hiroshi; and Yamaguchi, Masaru, 3,784,297.
Katlic, John E., to Allied Chemical Corporation. Dust control in longwall mining. 3,784,256, Cl. 299-12.000.
Kato, Takeshi: *See*—
Kaizaki, Hiroyuki; and Kato, Takeshi, 3,784,262.
Kattenhorn, Marion R. Teaching aid device. 3,783,531, Cl. 35-35.00b.
Katz, Robert E., to Webcraft Packaging, Inc. Cross folded envelope pamphlet. 3,784,185, Cl. 270-37.000.
Katzakian, John. Beverage can drinking holder. 3,784,059, Cl. 222-86.000.

Kaufmann, Albert R., to Whittaker Corporation. Method of producing spherical powder by eccentric electrode rotation. 3,784,656, Cl. 264-8.000.

Kaukeinen, Joseph Y.: *See*—
Gilman, Paul B., Jr.; and Kaukeinen, Joseph Y., 3,784,375.

Kawai, Isamu; Uchida, Tadao; and Ishima, Kenji, to Hitachi, Ltd. Air valve type carburetor and method of construction. 3,784,173, Cl. 261-44.00r.

Kawamura, Osamo. Aerodynamic engine system. 3,783,618, Cl. 60-226.00r.

KD Lamp Co.: *See*—
Ward, Richard W., 3,784,975.

Keator, Frederic R., to Auto Parks, Inc. Directional traffic control devices. 3,783,558, Cl. 49-49.000.

Keefe, Jack D.; and Finke, Eugene W., to Monarch Marking System Company, The. Method of fabricating an integrated piston and cylinder mechanism and valve assembly. 3,784,665, Cl. 264-261.000.

Keil, Joseph W., to Dow Corning Corporation. Foam control composition. 3,784,479, Cl. 252-358.000.

Kelleher, Jack: *See*—
Barrett, James Howard; and Kelleher, Jack, 3,784,874.

Keller, C., u. Co.: *See*—
Bucker, Franz, 3,783,800.

Keller, Joseph Richard; and Longenecker, Bruce Cameron, to AMP Incorporated. Control curcuit for magnetic actuator. 3,783,662, Cl. 72-1.000.

Kendall Company, The: *See*—
Dye, John F., 3,783,876.

Kendall Company, The, mesne: *See*—
Samour, Carlos M.; and Vida, Julius A., 3,784,547.

Kennecott Copper Corporation: *See*—
Hartung, Charles A., 3,784,104.

Kenworthy, Samuel P.; and Hall, Marcus A., to Claghorn, Frederic S. and DeWitt, John H.; d/b/a Cezoma International. Apparatus for fastening yarn winding tails. 3,784,119, Cl. 242-18.00r.

Kenyon, Lewis W.; and Plemmons, Jerry R., to General Electric Company. Luminaire. 3,784,806, Cl. 240-25.000.

Kenyon, Roger Y., to Philco-Ford Corporation. Constant lock-in range automatic frequency control. 3,784,917, Cl. 325-422.000.

Keptro, Joseph. Animal leash. 3,783,835, Cl. 119-109.000.

Kerr, James W. Safety device for hydraulically operated lift. 3,783,976, Cl. 187-8.450.

Kerschner, Paul M.: *See*—
Marcellis, Alphanso W.; and Kerschner, Paul M., 3,784,473.

Kersten, Daniel D. Structures for use in creating artificial dentures. 3,783,514, Cl. 32-2.000.

Kerttula, Into Isak; and Jaatinen, Per Arno. Machine for continuous manufacturing of chip boards. 3,784,340, Cl. 425-141.000.

Kertzscher, Klaus: *See*—
Mutze, Heinz; Barth, Gerhard; and Kertzscher, Klaus, 3,783,644.

Kessler, Hyman; and Peritt, Harvey L., to United States of America, Navy. Tubular adhesive joint with snap lock. 3,784,235, Cl. 285-21.000.

Keuerleber, Rudi: *See*—
Bockmann, Alfred; and Keuerleber, Rudi, 3,784,169.

Key, Carlo F.: *See*—
Krupnick, Albert C.; Key, Carlo F.; and Harwell, Roger J., 3,784,499.

Kidde, Walter, & Company, Inc.: *See*—
Greenwald, Harry, 3,783,661.

Kilby, Jack S. System for screening telephone calls. 3,784,721, Cl. 179-6.00r.

Kilgore, William E., to Hudson Pulp & Paper Corporation. Multiwall bag construction. 3,784,085, Cl. 229-55.000.

Killen, Richard J.; and Jones, Robert G., to Liberty Glass Company. Apparatus for imprinting objects such as bottles and the like. 3,783,777, Cl. 101-40.000.

Kimberly-Clark Corporation: *See*—
Schrading, Mark S.; and Arps, Marion T., 3,783,862.

Kimura, Eugene Tatsuru; and Anderson, David John, to Abbott Laboratories. Anti-tussive compositions. 3,784,702, Cl. 424-317.000.

Kimura, Katsuhiko, to Olympus Optical Co., Ltd. Apparatus for deriving diffractive rays by diffraction gratings. 3,784,833, Cl. 250-237.00g.

Kinemura, Masao, 1/2 to Arita, Koshei. Automatic power supply control apparatus for flat rate electric service systems. 3,783,988, Cl. 194-11.000.

King, Alan G.; and Logan, John C., to Norton Company. Wear resistant aluminous ceramic articles. 3,784,388, Cl. 106-73.400.

King, Michael Charles, to Bell Telephone Laboratories, Incorporated. High accuracy alignment procedure utilizing moire patterns. 3,783,520, Cl. 33-180.00r.

King, Paul A., to Union Carbide Corporation. Disposable absorbent pads containing insoluble hydrogels. 3,783,872, Cl. 128-290.00r.

Kirby, James Ray, to Monsanto Company. Color stabilization of fibers from acrylonitrile polymers. 3,784,511, Cl. 260-45.95p.

Kirchmayr, Rudolf; Heller, Hansjorg; and Rody, Jean, to Ciba-Geigy AG. V-triazolyl coumarins. 3,784,569, Cl. 260-308.00a.

Kirilin, Anatoly Fedorovich: *See*—
Kusovsky, Boris Isaakovich; Pavlov, Nikolai Ivanovich; Mattichenko, Anatoly Petrovich; Zakharov, Sergei Alexandrovich; and Kirilin, Anatoly Fedorovich, 3,784,461.

Kirkman, Douglas Frederick, to I. V. Pressure Controllers Limited. Fluid flow control devices. 3,783,898, Cl. 137-596.200.

Kirkpatrick, Richard A., to KLH Research and Development Corporation. Solid state remote power switch. 3,784,840, Cl. 307-11.000.

Kirschmann, John D. Flow control device for liquid applicators and process of operating same. 3,784,100, Cl. 239-11.000.

Kirst, Paul-Gerhard: *See*—
Bergmeister, Eduard; Kirst, Paul-Gerhard; and Winkler, Heinz, 3,784,648.

Kisling, James W., III, to Schlumberger Technology Corporation. Anchoring mechanism for a well tool. 3,783,941, Cl. 166-217.000.

Kitai, Atsuo: *See*—
Nishida, Hiroshi; Yamamoto, Masao; Kitai, Atsuo; Ozaki, Asaichiro; Nishimura, Yokio; Takemi, Hiroto; and Takemi, Chimo, 3,784,446.

Kitazawa, Hiroshi, to Brother Kogyo Kabushiki Kaisha. Knitting machine. 3,783,641, Cl. 66-60.00r.

Klebba, Horst: *See*—
Adler, Jurgen; Erck, Karl; Klebba, Horst; Kramer, Wolfgang; Maneck, Ernst; Mueller-Eckhardt, Hans; and Schwenk, Kurt, 3,783,568.

Kleemann, Axel; Schreyer, Gerd; Weiberg, Otto; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Schneideanstalt vormals Roessler. Process for the production of glycerine diesters and glycerine (II). 3,784,568, Cl. 260-491.000.

Klein, Dagobert; and Schneider, Gunter, to International Standard Electric Corporation. Electromechanical filter. 3,784,936, Cl. 333-71.000.

Klein, Herbert H.: *See*—
Moyer, Harris P.; and Klein, Herbert H., 3,783,498.

Klein, Kenneth E.: *See*—
Babin, Frank A.; and Klein, Kenneth E., 3,784,304.

Klevtsov, Valery Alexeevich: *See*—
Manyafov, Valery Nikolaevich; Busheev, Anatoly Ivanovich; Semenov, Roman Lvovich; and Klevtsov, Valery Alexeevich, 3,784,866.

KLH Research and Development Corporation: *See*—
Kirkpatrick, Richard A., 3,784,840.

Kliever, Waldo H. Method and apparatus for immobilizing a patient and conducting an X-ray examination. 3,783,863, Cl. 128-134.000.

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May, Oswald, 3,783,985.

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Styers, Henry H., 3,784,087.

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Joerchel, Egon; and Kohlhaas, Rudolf, 3,784,671.

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Herbert, William; and Kohlhepp, Dean H., 3,783,993.

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Iwama, Masakuni; Fujiwara, Mitsuto; Kojima, Tamotsu; and Yamaoto, Toshihiko, 3,784,383.

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Van Aken, Harold R., 3,784,912.

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Shigeyama, Shogo; Yamada, Yoichiro; and Kondo, Kunihiro, 3,784,749.

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Schwarz, Arnulf; Konig, Gerhard; and Pieloth, Manfred, 3,783,902.

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Krijger, Willem; and Burger, Jacobus J., 3,784,115.

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Morgolenko, Anatoly Sergeevich; Kononenko, Vadim Grigorievich; Fedosenko, Igor Grigorievich; Selivanov, Gennady Dmitrievich; Kushnarenko, Sergei Grigorievich; and Lepetjukha, Vladimir Semenovich, 3,783,672.

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Moritan, Norishige; Moriya, Ikuro; Ura, Junichi; and Koono, Makoto, 3,784,761.

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Fersch, Harry; and Kopido, Walter Heinz, 3,783,812.

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Ruthenberg, Meyer L., 3,784,215.

Korneeva, Calina Petrovna: *See—*
Mamin, Evgeny Borisovich; Makarov, Viktor Alexeevich; Korneeva, Calina Petrovna; Poppel, Boris Safronovich; and Ivanov, Vyacheslav Ivanovich, 3,784,825.

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Korsch, Gunter, 3,784,344.

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Kunert, Karlheinz; and Kozalla, Herbert, 3,783,482.

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Kubec, Jiri; and Saroch, Vladimir, 3,784,361.

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Adler, Jurgen; Erck, Karl; Klebba, Horst; Kramer, Wolfgang; Maneck, Ernst; Mueller-Eckhardt, Hans; and Schwenk, Kurt, 3,783,568.

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Bockmann, Alfred; and Keuerleber, Rudi, 3,784,169.
Gopfert, Max; and Gebhardt, Rudolf, 3,783,794.

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Gobran, Ramsis; Kremer, Leon V.; and Ethier, Dolores O., 3,784,502.

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Dullinger, Karl, 3,784,438.

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Hendrickson, Philip J.; and Resch, Richard J., 3,784,249.

Krume, Robert E. Ski Vehicle with improved front support means. 3,783,959, Cl. 180-6.00a.

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Claus, Gunter; and Doring, Friedrich, 3,784,134.

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Appleby, Paul E.; Folden, Denver C.; and Kubinski, Donald C., 3,784,437.

Kubota, Hirosuke: *See—*
Nakade, Sadao; Kubota, Hirosuke; Oshita, Toshiyuki; and Sakane, Kuniyoshi, 3,783,624.

Kubota, Yasuharu: *See—*
Watanabe, Toshiro; and Kubota, Yasuharu, 3,784,734.

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Kuhne, Wolfgang; and Goletz, Hubert, to Hoesch Maschinenfabrik Deutschland AG. Machine for rough- and/or finish-turning of heavy workpieces. 3,783,718, Cl. 82-2.00r.

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Kunststoffwerke Gebruder Anger GmbH: *See—*
Springfeld, Artur, 3,784,339.

Kunz, John E.: *See—*
Hass, David P.; and Kunz, John E., 3,784,223.

Kuper, Donald G., to Phillips Petroleum Company. Disproportionation of alkali metal salts of aromatic carboxylic acids. 3,784,639, Cl. 260-515.00p.

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Wissinger, Waldemar; Kurth, Josef; and Gauchel, Peter, 3,784,345.

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Kuse, Dieter, to Brown Boveri & Company Limited. Ferrimagnetic garnet corrected for temperature dependence of the Faraday effect and method for making the same. 3,784,281, Cl. 350-151.000.

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Morgolenko, Anatoly Sergeevich; Kononenko, Vadim Grigorievich; Fedosenko, Igor Grigorievich; Selivanov, Gennady Dmitrievich; Kushnarenko, Sergei Grigorievich; and Lepetjukha, Vladimir Semenovich, 3,783,672.

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Watanabe, Jun; Hosoi, Susmu; Kuwazaki, Masahiro; Ota, Akira; Takata, Toshikatsu; and Asaoka, Junichi, 3,784,413.

Kwikform, Limited: *See—*
Steele, Raymond Ernest, 3,784,151.

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Nakayama, Kiyoshi; and Tanaka, Haruo, 3,784,444.

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Martinez, Cristobal; and Rodriguez, Dario, 3,784,553.

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Bridegum, James Earl; and Laczkovich, Rudy A., 3,783,690.

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Neuman, Richard L., 3,784,248.

Lake, Ronald W. Folding knife. 3,783,509, Cl. 30-161.000.

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Lambert, Ronald R., to Polaroid Corporation. Preparation of tertiary organophosphine oxides. 3,784,638, Cl. 260-526.00s.

Lamborn, Homer C., to Curwood, Inc. Apparatus for sizing joint rings for cylindrical pipes. 3,783,671, Cl. 72-392.000.

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Jackson, Weldon H.; and Lamy, John C., 3,784,937.

Landis, Robert L., to Landis Sales Company, The. Direct fixation rail fastener. 3,784,097, Cl. 238-310.000.

Landis Sales Company, The: *See*—
Landis, Robert L., 3,784,097.

Landis Tool Company: *See*—
Norrie, George Ogilvie, 3,784,897.

Landry, Jean-Guy: *See*—
Giguere, Jacques; and Landry, Jean-Guy, 3,784,493.

Lane, George C., to Warner-Lambert Company. Method of coating a continuous strip of ribbon razor blade material. 3,784,458, Cl. 204-192.000.

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Langen, Marinus J. M.; and Langen, Jacobus J., 3,783,752.

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Langen, Marinus J. M.; and Langen, Jacobus J., 3,783,752.

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Miller, Arnold W.; and Larson, William D., Jr., 3,784,901.

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Stearns, William P.; and Lauchner, John K., 3,784,750.

Lauchner, Manfred: *See*—
Naumann, Siegfried; Lauchner, Manfred; Golbs, Christian; and Schubert, Harry, 3,783,646.

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Layne, Gilbert S.: *See*—
Bangs, Leigh B.; Huml, James O.; and Layne, Gilbert S., 3,784,371.

Lazar, Cristian: *See*—
Coanda, Henry; Aldea, Gheorghe; Bodea, Ion; Truica, Vasile; Hanciulescu, Valentin; Posirca, Radu; Lazar, Cristian; and Gabor, Iacob, 3,784,325.

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Le Meur, Roger: *See*—
Kostic, Svetislav; and Le Meur, Roger, 3,784,823.

Leboutet, Hubert: *See*—
Tronc, Dominique; and Leboutet, Hubert, 3,784,873.

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Lee, Charles A.: *See*—
Lenthall, Robert; Mills, Don; and Lee, Charles A., 3,784,186.

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Griggs, W. Kenneth, 3,783,549.
Zweifel, Fritz, 3,784,096.

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Hicks, Carroll, 3,784,067.

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Lefranc, Jean E.: *See*—
Brignard, Francois C.; and Lefranc, Jean E., 3,783,727.

Lemos, Walter G.: *See*—
Burke, George E., Jr.; Lemos, Walter G.; and Shippee, Dennis M., 3,784,077.

Lenthall, Robert; Mills, Don; and Lee, Charles A., to International Paper Company, mesne. Method of and apparatus for making pleated and folded articles from a web. 3,784,186, Cl. 270-64.000.

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Lepetjukha, Vladimir Semenovich: *See*—
Morgolenko, Anatoly Sergeevich; Kononenko, Vadim Grigorievich; Fedosenko, Igor Grigorievich; Selivanov, Gennady Dmitrievich; Kushnarenko, Sergei Grigorievich; and Lepetjukha, Vladimir Semenovich, 3,783,672.

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Leschander, Richard G.: *See*—
Levy, Marilyn; and Leschander, Richard G., 3,784,377.

Leung, Han-Chung: *See*—
Fox, James H.; Leung, Han-Chung; and Stern, Howard R., 3,784,210.

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Van Kampen, Daniel Marten; and Weenen, Jacobus Hendricus Marinus, 3,784,476.

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Lewis, Kenneth Gill: *See*—
Armstrong, David Alun; and Lewis, Kenneth Gill, 3,784,072.

Lewis, Thomas Robert: *See*—
Buckman, Wayne T.; Miller, Blaine Monroe; and Lewis, Thomas Robert, 3,784,116.

Liang, Kai, to Eastman Kodak Company. Internal support for diffusion transfer element. 3,784,382, Cl. 96-77.000.

Liberty Carton Co.: *See*—
Pfaffendorf, James L.; and Johnson, Marlyn D., 3,784,083.

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Killen, Richard J.; and Jones, Robert G., 3,783,777.

Licenta Patent-Verwaltung-G.m.b.H.: *See*—
Schadebrodt, Gerhard; Altzschner, Gustav; Feldmann, Hans-Helmut; Graichen, Bernhard; and Pabst, Wolfgang, 3,783,741.

Licentia Patent-Verwaltungs-GmbH: *See*—
Maurer, Robert, 3,784,916.

Lilly, Eli, and Company: *See*—
Miller, Richard P., 3,784,686.
Tao, Eddie Yi Ping, 3,784,613.

Lindegger, Robert, to Armor Elevator Company, Inc., mesne. Position indicating apparatus. 3,783,975, Cl. 187-29.00r.

Linden-Alimak AB: *See*—
Westerlund, Tage; and Hedman, Jarl, 3,784,032.

Lindgren, Frank E.: *See*—
Frank, William; and Lindgren, Frank E., 3,783,785.

Lindsay Wire Weaving Company: *See*—
Hill, Vernon J., Jr.; Southam, Earl A.; and McDowell, John R., 3,784,133.

Lindstrand, Gary L.: *See*—
Allison, Rudolph L.; and Lindstrand, Gary L., 3,783,551.

Lindstrom, Roald E.: *See*—
Elges, Carl H., III; Hasket, Philip R.; Bauer, Donald J.; and Lindstrom, Roald E., 3,784,669.

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Stump, Paul W.; Huber, James A.; and Lipinski, John M., 3,783,908.

Liquid Carbonic Corporation: *See*—
Glynn, Emmett P.; and Hsu, Howard L., 3,783,633.

Litman, Alan, to General Ordnance Equipment Corporation. Night vision device with viewing accessories. 3,784,278, Cl. 350-10.000.

Litzler, Alfred: *See*—
Weber, Hans-Peter; Litzler, Alfred; Hertig, Jean; Milicevic, Branimir; Fuhring, Heinrich; Sieber, Johannes-Helmut; and 042818, 3,783,650.

Lo, George A.: *See*—
Frankel, Milton B.; and Lo, George A., 3,784,420.

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Burnham, Donald; Honeyball, Samuel Walter; Spooner, Michael; and Lobb, Daniel Richard, 3,784,742.

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Logan, John C.: *See—*
King, Alan G.; and Logan, John C., 3,784,388.

Logar, Andrew. Venetian blind. 3,783,929, Cl. 160-168.000.

Loma Corporation: *See—*
Hawk, Bob R., 3,784,049.

Lombard, Ralph: *See—*
Sherwood, Noble; and Lombard, Ralph, 3,783,851.

Lombardino, Joseph G.: *See—*
Holland, Gerald F.; and Lombardino, Joseph G., 3,784,606.

Lombardo, Michael S.: *See—*
Grunwald, John J.; D'Ottavio, Eugene D.; Rhodenizer, Harold L.; and Lombardo, Michael S., 3,784,440.

Long-Lok Fasteners Corporation: *See—*
Bagheri, Mansour A. H.; Fitzgerald, Walter P., Jr.; and Sanders, Beatrix Y., 3,784,435.

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Longenecker, Bruce Cameron: *See—*
Keller, Joseph Richard; and Longenecker, Bruce Cameron, 3,783,662.

Lonnemo, Kurt R., to Sperry Rand Corporation. Power transmission. 3,784,327, Cl. 417-222.000.

Lopez, Erlindo C. Christmas tree stand holder. 3,784,136, Cl. 248-44.000.

Low, William W.: *See—*
Morgan, Thomas R.; Low, William W.; Wamser, Christian A.; and Bruen, Charles P., 3,784,672.

Lowe, Warren: *See—*
Brown, Stuart; and Lowe, Warren, 3,784,474.

Lowell, Seymour; and Karp, Stewart. Method of determining small surface areas. 3,783,697, Cl. 73-432.0ps.

Lowther, Frank E., to Purification Sciences, Inc. Solid state frequency converter for corona generator. 3,784,838, Cl. 250-536.000.

Lucas Aerospace Limited: *See—*
Crawley, Alan Arthur, 3,784,329.

Lucas, Joseph, (Industries) Limited: *See—*
Bottoms, Harry Simister, 3,783,905.
Lewis, Geoffrey Arthur, 3,784,317.

Lucks, Irwin A.: *See—*
Perkins, Carroll R.; and Lucks, Irwin A., 3,784,725.

Lukas, Helmut Hans: *See—*
DeBortoli, George; and Lukas, Helmut Hans, 3,784,728.

Lukens Steel Company: *See—*
Walters, Joseph J.; and McGibbon, Verdun R., 3,784,176.

Lund, Herbert T.: *See—*
Amer, Kenneth B.; and Lund, Herbert T., 3,784,319.

Lupert, Rosemarie. Method of producing continuous plastic shapes. 3,784,659, Cl. 264-47.000.

Luthy, Richard G.: *See—*
Ciani, John B.; and Luthy, Richard G., 3,783,524.

Lyde, Derek Martin, to Albright & Wilson Limited. Additive for the electrodeposition of copper. 3,784,454, Cl. 204-52.00r.

Lynch, Paul J.: *See—*
Modahl, Robert J.; and Lynch, Paul J., 3,783,631.

Lyons, John G.: *See—*
Johnston, Samuel A.; Lyons, John G.; and Riedmayer, Henry J., 3,784,948.

Maass, Edward Ralph, to Curtis & Marble Machine Co. Speedometer. 3,784,913, Cl. 324-173.000.

Mabert, Roger Jean, to Ducellier & Cie. Ignition advance circuit. 3,783,850, Cl. 123-146.50a.

Macaulay, William R.; Feldhake, Ralph H.; Higgins, Dale G.; and Santa Maria, Richard C., to ESB Incorporated. Battery sealant carrier having adhesive patches impregnated therein and a method for making it. 3,784,414, Cl. 136-175.000.

MacDermid, Incorporated: *See—*
Grunwald, John J.; D'Ottavio, Eugene D.; Rhodenizer, Harold L.; and Lombardo, Michael S., 3,784,440.

Mach, Thomas F. Apparatus for imparting gloss to soap. 3,784,533, Cl. 264-146.000.

Maciula, L. Andrew, to Oklahoma State University. Hydroclone for separating an immiscible heavy phase from a light phase liquid. 3,784,009, Cl. 210-114.000.

Maeda, Tsutomu; and Sato, Yoshikazu, to Dainichi-Nippon Cables, Ltd. Apparatus for connecting waveguide and method therefor. 3,784,939, Cl. 333-98.00r.

Magalotti, Thomas D.; and August, Ernest; deceased (by August, Eleanor J.; executrix). Hand tool for dispensing frozen food items. 3,784,341, Cl. 425-280.000.

Magee, Ramon J.: *See—*
Greenwood, Aaron O.; Magee, Ramon J.; and Otto, Stanley W., 3,783,779.

Maier, Roe J., Jr. Releasable ski binding. 3,784,216, Cl. 280-11.35d.

Maizlish, Bernard L.: *See—*
Herling, Charles A.; and Maizlish, Bernard L., 3,784,138.

Makarov, Viktor Alexeevich: *See—*
Mamin, Evgeny Borisovich; Makarov, Viktor Alexeevich; Korneeva, Calina Petrovna; Poppel, Boris Safronovich; and Ivanov, Vyacheslav Ivanovich, 3,784,825.

Makino, Katsuo; Joh, Seiji; and Takeda, Kouzou, to Fuji Xerox Co., Ltd. Electrophotographic developing process. 3,783,818, Cl. 118-4.000.

Malcomson, Robert S.: *See—*
Hutchinson, Herman R.; Arpajian, Vasken F.; and Malcomson, Robert S., 3,784,657.

Malin, Eugene F. Insect protective garment. 3,783,451, Cl. 2-4.000.

Malleck, Joseph W.: *See—*
Whalen, Mark E.; and Malleck, Joseph W., 3,783,494.

Mallory, P. R., & Co., Inc.: *See—*
Booen, James M., 3,783,480.
Cilberti, Frank Leonard, Jr., 3,784,411.

Maly, Neil A.: *See—*
Menapace, Henry R.; Benner, Gerald S.; and Maly, Neil A., 3,784,631.

Maly, Neil A.; Menapace, Henry R.; and Benner, Gerald S., to Goodyear Tire & Rubber Company, The. Dimerization or codimerization of alpha olefins. 3,784,629, Cl. 260-683.15d.

Maly, Neil A.; Menapace, Henry R.; and Benner, Gerald S., to Goodyear Tire & Rubber Company, The. Dimerization or codimerization of alpha olefins. 3,784,630, Cl. 260-683.15d.

Mamin, Evgeny Borisovich; Makarov, Viktor Alexeevich; Korneeva, Calina Petrovna; Poppel, Boris Safronovich; and Ivanov, Vyacheslav Ivanovich. Beta-irradiation apparatus. 3,784,825, Cl. 250-496.000.

Maneck, Ernst: *See—*
Adler, Jurgen; Erck, Karl; Klebba, Horst; Kramer, Wolfgang; Maneck, Ernst; Mueller-Eckhardt, Hans; and Schwenk, Kurt, 3,783,568.

Manghirmalani, Arjan T., to Xerox Corporation. Dark decay retardation. 3,784,299, Cl. 355-3.000.

Mannherz, Elmer D.; Riester, Hubert A.; Schmoock, Roy F.; and Yard, John S., to Fischer & Porter Company. Electromagnetic flowmeter with square-wave excitation. 3,783,687, Cl. 73-194.0em.

Manoussos, Georges: *See—*
Kalopissis, Gregoire; Bouillon, Claude; Manoussos, Georges; and Berrebi, Claudine, 3,784,685.

Mans, Leonardus Frans Helene: *See—*
Geominy, Louis Joseph Henri; Gommans, Hubertus Johannes Josephus; Mans, Leonardus Frans Helene; and Ruytenbeek, Silvester Marie, 3,784,784.

Manske, Wendell J.: *See—*
Bildusas, Leonas L.; and Manske, Wendell J., 3,784,394.

Mansnerus, Harlan H., to United States of America, Navy. Multi-input loop filter with independent bandwidth and response characteristics. 3,784,924, Cl. 330-30.00r.

Manyafov, Valery Nikolaevich; Busheev, Anatoly Ivanovich; Semenov, Roman Lvovich; and Klevtsov, Valery Alexeevich. Electron tube having chamber anode structure. 3,784,866, Cl. 313-299.000.

Marathon Oil Company: *See—*
Holovka, John M.; and Hurley, Edward, 3,784,646.
Jennings, Robert R.; and Thornton, William M., 3,783,944.

Maravetz, Lester L., to Esso Research and Engineering Company. Herbicidal N-furfuryl substituted 216-dinitroanilines. 3,784,574, Cl. 260-347.700.

Marcellis, Alphanso W.; and Kerschner, Paul M., to Cities Service Oil Company. Lubricating oil compositions. 3,784,473, Cl. 252-51.50a.

Marchant, Derek N.: *See—*
Bagshawe, Kenneth D.; and Marchant, Derek N., 3,784,826.

Marco, Leslie Stephan, to Illinois Tool Works Inc. Nursing bottle construction and assembly. 3,784,039, Cl. 215-11.00e.

Marforio, Nerino, to S.p.A. Virginio Rimoldi & C. Apparatus for producing stitching patterns with sewing machine removing means. 3,783,809, Cl. 112-121.140.

Marforio, Nerino, to S.p.A. Virginio Rimoldi & C. Looper driving device with periodically variable speed in zig-zag chainstitch sewing machines. 3,783,810, Cl. 112-159.000.

Mark, Margaret F. Bookrack. 3,784,021, Cl. 211-43.000.

Markham, Michael H., to Chubb Industries, Limited. Safe deposit apparatus. 3,784,090, Cl. 232-44.000.

Markowitz, Ivan N.; and Gray, Darby A., to Honeywell Information Systems, Inc. Solenoid actuator. 3,784,943, Cl. 335-266.000.

Marks, John L., to International Telephone and Telegraph Corporation. Wire cutting apparatus. 3,783,726, Cl. 83-355.000.

Maroschak, Ernest J., to Plastic Tubing Inc. Converted corrugated pipe molding machine. 3,784,346, Cl. 425-326.00b.

Marquette Electronics, Inc.: *See—*
Richetts, James R., 3,783,865.

Marrett, Rolf: *See—*
Franck, Heinz-Gerhard; Metzendorf, Walter; Schweym, Erich; Beneke, Herbert; Marrett, Rolf; Nijssen, Jozef; and Omran, Jaafar, 3,784,487.

Marsee, Frederick J.: *See—*
Hirschler, Daniel A., Jr.; and Marsee, Frederick J., 3,783,841.

Marsh, Albert F. Automatic egg incubator. 3,783,832, Cl. 119-37.000.

Martens, Hans; Diepers, Heinrich; and Muller, Alfred, to Siemens Aktiengesellschaft. Method of treating the surface of superconductor niobium cavity resonators. 3,784,452, Cl. 204-26.000.

Martin Guy: *See—*
Auphan, Michel Joseph; and Martin Guy, 3,783,515.

Martin, Johannes Josef; Martin, Walter Josef; and Weber, Erich, to Martin, Josef, Feuerungsbau GmbH. Furnace construction. 3,783,803, Cl. 110-165.00r.

Martin, Josef, Feuerungsbau GmbH: *See—*

Martin, Johannes Josef; Martin, Walter Josef; and Weber, Erich, 3,783,803.
Martin, Richard John: *See*—
Fleming, George Latto; and Martin, Richard John, 3,784,647.
Martin, Walter Josef: *See*—
Martin, Johannes Josef; Martin, Walter Josef; and Weber, Erich, 3,783,803.
Martinec, Eugene F.: *See*—
Fairaizl, Max L.; and Martinec, Eugene F., 3,783,474.
Martinez, Cristobal; and Rodriguez, Dario, to Laboratories Made, S.A. Pyridoxine alpha-ketoglutarate and its derivatives. 3,784,553, Cl. 260-297.500.
Martone, Ronald J.; Goldman, Samuel C.; and Heaton, Clifford C., to Picker Corporation. Scintillation camera with light diffusion system. 3,784,819, Cl. 250-366.000.
Marunaka Tekkosho Inc.: *See*—
Mochizuki, Nakataro, 3,783,917.
Maruyama, Koichi: *See*—
Takemoto, Takeo; Yamazaki, Eiich; Maruyama, Koichi; and Ueda, Toshio, 3,783,754.
Yamazaki, Eiichi; Maruyama, Koichi; and Ueda, Toshio, 3,784,282.
Marvel, Carl S.: *See*—
Hedberg, Frederick L.; and Marvel, Carl S., 3,784,517.
Masago, Takaya: *See*—
Sato, Takakazu; and Masago, Takaya, 3,784,172.
Maschinenfabrik Augsburg: *See*—
Hirt, Dieter; Gerlich Leonhard; and Heinle, Eugen, 3,783,681.
Maschinenfabrik Buckau R. Wolf Aktiengesellschaft: *See*—
Steprath, Werner; and Birkholz, Manfred, 3,783,701.
Maschinenfabrik Lorenz Aktiengesellschaft: *See*—
Seiberlich, Walter, 3,783,740.
Maschinenfabrik Oerlikon: *See*—
Nylund, Knut, 3,784,350.
Mason, Charles H., to United States of America, Atomic Energy Commission. Multipoint vibration monitoring system. 3,783,680, Cl. 73-71.200.
Masoneilan International, Inc.: *See*—
Paetzel, Herbert; and Pfeiffer, Horst, 3,784,156.
Massicotte, Alfred G. Reaction game with scrambling of indicia. 3,784,197, Cl. 273-1.00e.
Massinger, Alvin G. Stabilizer bar link. 3,784,180, Cl. 267-66.000.
Masson, James C.; and Hall, Albert M., to Monsanto Company. Color stabilized acid-dyeable acrylonitrile-containing fibers. 3,784,512, Cl. 260-45.95p.
Master Lock Company: *See*—
Foote, Daniel J., 3,783,656.
Foote, Daniel J., 3,783,657.
Matherne, Lee J. Apparatus for welding vertical members during inclement weather. 3,783,906, Cl. 138-103.000.
Matsuda, Motonobu: *See*—
Tsujimoto, Kayoshi; Yata, Kotaro; and Matsuda, Motonobu, 3,783,758.
Matsumoto, Ikuo; and Okazawa, Masao, to Banyu Pharmaceutical Co., Ltd. and Hiroyoshi Hidaka. 2,6-Bis(thio urea) derivatives of pyridine. 3,784,632, Cl. 260-293.690.
Matsumoto, Kazuo: *See*—
Okumura, Kentaro; Matsumoto, Kazuo; and Suzuki, Mamoru, 3,784,640.
Matsumura, Yasuo: *See*—
Sekiguchi, Hideto; Matsumura, Yasuo; Arai, Kojiro; Haruyama, Kunio; and Wakitani, Mitsuru, 3,784,666.
Matsushita Electric Industrial Co., Ltd.: *See*—
Amagami, Keizo; Nishijyo, Masaru; Takahashi, Yutaka; and Nawa, Motoyuki, 3,783,904.
Nagahiro, Michinori; Yabu, Toshiomi; Hosono, Hiroo; and Ushihara, Masaharu, 3,784,128.
Watanabe, Jun; Hosoi, Susmu; Kuwazaki, Masahiro; Ota, Akira; Takata, Toshikatsu; and Asaoka, Junichi, 3,784,413.
Matsushita Electric Industrial Company, Limited: *See*—
Kobayasi, Hiroyuki; and Akasaki, Isamu, 3,783,825.
Mattel, Inc.: *See*—
Fox, James H.; Leung, Han-Chung; and Stern, Howard R., 3,784,210.
Shapero, Wallace H., 3,783,554.
Summerfield, William F., 3,784,211.
Matthews, John W. Horizontal vibration isolation system. 3,784,146, Cl. 248-358.00r.
Mattichenko, Anatoly Petrovich: *See*—
Kusovsky, Boris Isaakovich; Pavlov, Nikolai Ivanovich; Mattichenko, Anatoly Petrovich; Zakharov, Sergei Alexandrovich; and Kirilin, Anatoly Fedorovich, 3,784,461.
Maurer, August, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Apparatus for cooling a continuous casting mould. 3,783,937, Cl. 165-107.000.
Maurer, Robert, to Licentia Patent-Verwaltungs-GmbH. Coherent phase receiver circuit. 3,784,916, Cl. 325-419.000.
Mautz, Frances E. Loading container means. 3,784,054, Cl. 220-22.003.
Maxey, Loren R. Snow handling apparatus. 3,783,949, Cl. 172-133.000.
May, Francis A., to Consolidation Coal Company. Cable splice apparatus. 3,783,487, Cl. 29-203.00d.
May, John J. Digital system for controlling traffic signals. 3,784,971, Cl. 340-40.000.
May, Oswald, to Klockner-Humboldt-Deutz Aktiengesellschaft. Transmission overdrive shifted by clutch release. 3,783,985, Cl. 192-3.500.
Mayr, Helmut: *See*—
Winkler, Alfred; Pelte, Richard; Huber, Theodor; and Mayr, Helmut, 3,784,292.
Mc Intyre, Frank H., Jr.: *See*—
Yocum, Norman E.; and Mc Intyre, Frank H., Jr., 3,783,559.
McCaffray, Edmund, Jr. Stitch spacer for broom stitching machine. 3,783,806, Cl. 112-6.000.
McCombie, William S.: *See*—
Whitley, Ernest M.; Beaman, Don L.; and McCombie, William S., 3,783,763.
McCoy, Paul O.: *See*—
Zimmerman, Stanley D.; and McCoy, Paul O., 3,784,531.
McDonald, Ralph E.: *See*—
Eddens, Fletcher C.; Corley, William P.; Salling, Jack Ronald; and McDonald, Ralph E., 3,784,137.
McDonnell Douglas Corporation: *See*—
DeGaston, Alexis Neal, 3,784,876.
McDowell, John R.: *See*—
Hill, Vernon J., Jr.; Southam, Earl A.; and McDowell, John R., 3,784,133.
McFarland, James D., Jr. Inlet manifold for an internal combustion engine. 3,783,843, Cl. 123-52.0mv.
McGahon, John O.; and Byrne, William J., to Smyth Manufacturing Company, mesne. Conveyor. 3,783,991, Cl. 198-33.0ab.
McGeary, Frank L.; and Zampetti, Patrick L., to Construction Specialties Inc. Foot grilles and mats. 3,783,471, Cl. 15-215.000.
McGibbon, Verdun R.: *See*—
Walters, Joseph J.; and McGibbon, Verdun R., 3,784,176.
McGlothlin, Raymond E.; Werlein, Eugene R.; Taylor, Bruce F.; and Schultz, Roger Lee, to Dresser Industries, Inc. Drilling fluid agent and method of making same. 3,784,579, Cl. 260-414.000.
McGonigle, Frank Michael: *See*—
Sonn, George Frank; and McGonigle, Frank Michael, 3,784,393.
McGrogan, Ellwood Patrick, Jr., to RCA Corporation. Constant current circuit. 3,784,844, Cl. 307-270.000.
McGusty, Elizabeth R.; and Sutton, Blaine M., to Smithkline Corporation. Phosphine or phosphite gold complexes of thioethanol and derivatives thereof to treat arthritis. 3,784,687, Cl. 424-212.000.
McIntire, Otis R.: *See*—
Steinhauer, Alfred F.; and McIntire, Otis R., 3,784,488.
McIntosh, Alexander Charles; and Smith, Maurice Irvin, to Tel-Tone Corporation. Pulse ratio detector. 3,784,758, Cl. 179-84.0vf.
McKendry, Lennon H.: *See*—
Larsen, Eric R.; McKendry, Lennon H.; and Edamura, Fred Y., 3,784,610.
Larsen, Eric R.; McKendry, Lennon H.; and Edamura, Fred Y., 3,784,611.
McKernan, Bernard J., to Van Dorn Company. Containers for corrosive food products. 3,784,048, Cl. 220-54.000.
McKown, Alan G., to Minnesota Mining and Manufacturing Company. Process for coating particulate adhesive. 3,784,395, Cl. 117-17.000.
McNally, John P.; and Neumann, Henry O. Hydraulic jack lift safety brake system. 3,783,983, Cl. 188-189.000.
McNeil, Thomas William: *See*—
Hope, William Ernst; Hope, Mary Jarvie; and McNeil, Thomas William, 3,784,018.
McPherson, Neil Freeman; and Hanssmann, Nils, to Atomic Energy of Canada, Limited. Method and apparatus for T.I.G. tube welding. 3,784,778, Cl. 219-60.00a.
McReynolds, James L.; and Topalian, Harry H., to General Foods Corporation. Protective coatings for confectioneries and bakery products. 3,784,714, Cl. 426-171.000.
McVay, Malcolm Scott C., to U.S. Chemicals and Plastics, Inc., A Div. of Alco Standard Corporation. Additive package and method of compounding resins therewith. 3,784,005, Cl. 206-84.000.
Mead Corporation, The: *See*—
Stout, James T., 3,784,053.
Medical Innovations, Inc.: *See*—
Sauer, Harold S.; Hagopian, Nubar D.; and Colman, John M., 3,783,859.
Medix, Inc.: *See*—
Waldbillig, Charles C., 3,783,900.
Meher, Martin Duane: *See*—
Carter, J. Warne; and Meher, Martin Duane, 3,784,239.
Meier, Rene: *See*—
Gagneux, Vandre; Heckendorn, Roland; and Meier, Rene, 3,784,556.
Meijer, Roelf Jan; and Jaspers, Hendrik Alphons, to U.S. PHilips Corporation. Gas-supported rolling diaphragm seal for piston and cylinder assembly. 3,783,745, Cl. 92-83.000.
Meitz, Frederick W., to MSL Industries, Inc. Automatic screw driver. 3,783,491, Cl. 29-212.00r.
Menapace, Henry R.: *See*—
Maly, Neil A.; Menapace, Henry R.; and Benner, Gerald S., 3,784,629.
Maly, Neil A.; Menapace, Henry R.; and Benner, Gerald S., 3,784,630.

Menapace, Henry R.; Benner, Gerald S.; and Maly, Neil A., to Goodyear Tire & Rubber Company, The. Dimerization or codimerization of alpha olefins. 3,784,631, Cl. 260-683.15d.
Mentzer, James A. Bridge bidding indicator. 3,784,719, Cl. 35-8.00b.
Mercer, Gerald D.: *See—*
Buckman, Stanley J.; Pera, John D.; Raths, Fred W.; and Mercer, Gerald D., 3,784,649.
Merck & Co., Inc.: *See—*
Saari, Walfred S.; and Miller, Charles S., 3,784,700.
Spangler, Herbert D., 3,784,716.
Stone, Clement A., 3,784,703.
Merck & Company, Inc.: *See—*
Firestone, Raymond A., 3,784,590.
Merklinghaus, Horst, to Tedeco, N.V. and Tedeco Verpachung G.m.b.H. Apparatus for deep drawings containers of thermoplastic film material. 3,784,342, Cl. 425-292.000.
Merrill, George S. Apparatus and method for generating electricity. 3,784,449, Cl. 202-180.000.
Messina, Antonio: *See—*
Grimm, Hans-Ueli; Zufferey, Daniel; and Messina, Antonio, 3,784,954.
Messner, Rudolf; and Zilken, Hans-Joachim, to EFKA-Werke Fritz Kienh GmbH. Device for filling cigarette tubes. 3,783,882, Cl. 131-70.000.
Metallgesellschaft Aktiengesellschaft: *See—*
Ertl, Dietrich; Eishold, Horst-Gunter; Gilles, Helmut; Schmolling, Gunther; Steuernagel, Walter; and Nitz, Jurgen, 3,783,589.
Metallurgical Exoproducts Corporation: *See—*
Rocher, George; and Vayda, Pierre Andre, 3,784,177.
Metallwerk Max Brose & Co.: *See—*
Dehler, Bernard, 3,783,702.
Metcalfe, Kenneth A.; and Clements, Alwin Spencer, to Commonwealth of Australia, The; care of the Secretary, Department of Supply. Transferring recorded signals and latent electrostatic images before development. 3,784,398, Cl. 117-17.500.
Method Industries, Ltd.: *See—*
Yamano, Togo; Jono, Kumiko; Sato, Shigehiko; and Nakanishi, Michio, 3,784,699.
Metritape, Inc.: *See—*
Ehrenfried, Albert D.; and Pierce, Norton T., 3,783,689.
Metrosound Manufacturing Company Limited: *See—*
Myers, Mark Stanley; and Bishop, Ronald Frederick, 3,783,470.
Metzendorf, Walter: *See—*
Franck, Heinz-Gerhard; Metzendorf, Walter; Schweym, Erich; Beneke, Herbert; Marrett, Rolf; Nijssen, Jozef; and Omran, Jaafar, 3,784,487.
Meyer, Erwin: *See—*
Forgo, Gabor; Meyer, Erwin; and Schilter, Josef, 3,783,828.
Meyer, Jacques: *See—*
Thomas, Philippe; and Meyer, Jacques, 3,784,586.
Meyer, Kaye A., mesne: *See—*
Billings, Roy O.; and Henderson, Samuel R., 3,783,613.
Meyer, Leonard S.: *See—*
Drostholm, Frede Hilmar; and Meyer, Leonard S., 3,784,667.
Meyer, Melvin H., to Stone Container Corporation. Skin packaging process and skin package thereof. 3,784,004, Cl. 206-80.00a.
Meyer, Roth & Pastor, Maschienefabrik GmbH: *See—*
Wuest, Toni, 3,783,609.
Meyers, Duane A. Fishing lure retriever. 3,783,546, Cl. 43-17.200.
Michael, Malden W.: *See—*
Innes, William B.; Michael, Malden W.; and Adler, Stephen F., 3,784,484.
Michael, Ulrich, to Siemens Aktiengesellschaft. Motorized control rod drive. 3,784,889, Cl. 318-171.000.
Michel, Eberhard, to Siemens Aktiengesellschaft. Steam generator for pressurized water nuclear reactors. 3,783,838, Cl. 122-34.000.
Michel, Karl: *See—*
Randak, Alfred; and Michel, Karl, 3,784,418.
Mihaldi, Floro D., to Case Westen Reserve University. Tomographic scanning process. 3,784,820, Cl. 250-362.000.
Milan, Ernest A., to Goodyear Tire & Rubber Company, The. Variable length festooning of web material. 3,784,071, Cl. 226-1.000.
Miles, Peter, to Ciba-Geigy AG. Acrylate addition products of dialkyl phosphorodithioic acids. 3,784,588, Cl. 260-928.000.
Milicevic, Branimir: *See—*
Weber, Hans-Peter; Litzler, Alfred; Hertig, Jean; Milicevic, Branimir; Fuhring, Heinrich; Sieber, Johannes-Helmut; and 042818, 3,783,650.
Miller, Arnold W.; and Larson, William D., Jr., to Electro-Specialties, Inc. Capacitor discharge ignition system testing apparatus. 3,784,901, Cl. 324-16.00r.
Miller, Blaine Monroe: *See—*
Buckman, Wayne T.; Miller, Blaine Monroe; and Lewis, Thomas Robert, 3,784,116.
Miller, Charles S.: *See—*
Saari, Walfred S.; and Miller, Charles S., 3,784,700.
Miller, Charlie D., to Carrier Corporation. Rotary internal tube cutter. 3,783,721, Cl. 82-82.000.
Miller, Edward F.: *See—*
Chafetz, Harry; Cullen, William P.; and Miller, Edward F., 3,784,645.
Miller, James L.; Wright, Carl J.; and Harrold, Marshall C., to General Motors Corporation. Clothes dryer with press saver cycle including periodic signals. 3,783,529, Cl. 34-45.000.
Miller, Richard P., to Lilly, Eli, and Company. Method of inhibiting the action of renin in hypertensive mammals. 3,784,686, Cl. 424-94.000.
Miller, Ruth A.: *See—*
Saari, Walfred S.; and Miller, Charles S., 3,784,700.
Mills, Billy R. Foot rest for trucks. 3,784,247, Cl. 296-75.000.
Mills, Don: *See—*
Lenthall, Robert; Mills, Don; and Lee, Charles A., 3,784,186.
Milltronics Limited: *See—*
Grothe, John; and Osborne, Brian Frank, 3,783,695.
Milprint, Inc.: *See—*
Paisley, George C.; and Tier, Fred G., 3,784,434.
Minami, Hiroshi; Ando, Masao; and Obata, Yoshiharu, to Tokyo Shibaura Electric Co., Ltd. Cathode ray tube device. 3,784,741, Cl. 178-7.880.
Minnesota Mining and Manufacturing Company: *See—*
Amos, James H., 3,783,856.
Bildusas, Leonas L.; and Manske, Wendell J., 3,784,394.
Gobran, Ramsis; Kremer, Leon V.; and Ethier, Dolores O., 3,784,502.
McKown, Alan G., 3,784,395.
Shevlin, Thomas S., 3,784,787.
Minolta Camera Kabushiki Kaisha: *See—*
Tsujimoto, Kayoshi; Yata, Kotaro; and Matsuda, Motonobu, 3,783,758.
Miscevic, Daniel V., 1/2 to Gopman, Martin D. Holder for shank button. 3,783,808, Cl. 112-114.000.
Mitchel & King Skates Limited: *See—*
Staples, John, 3,784,217.
Mitchell Industrial Tire Co., Inc.: *See—*
Estabrook, Frederick C., 3,783,484.
Mitchell, Olga Mary Mracek: *See—*
Berkley, David Arthur; and Mitchell, Olga Mary Mracek, 3,784,747.
Mito, Sadao: *See—*
Motegi, Shoji; Uki, Northiro; and Mito, Sadao, 3,784,855.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Takayanagi, Shigenao; and Nimoda, Toyoo, 3,784,187.
Mitsuishi Fukai Tekkosho, Ltd.: *See—*
Iwasaki, Shigeo, 3,784,343.
Miyake, Susumu, to Fuji Toyuki Co., Ltd. Lubrication oil applicator device. 3,783,971, Cl. 184-3.00r.
Miyata, Katsuhiko: *See—*
Uno, Naoyuki; Nomura, Katsuhiko; Sakazaki, Tadazumi; Watanabe, Koichiro; Miyata, Katsuhiko; and Urano, Fumio, 3,783,765.
Miyata, Kenji; and Okamura, Masahiro, to Hitachi, Ltd. Bidirectional switching semiconductor device. 3,784,886, Cl. 317-235.00r.
Miyazawa, Hideichi, to Kabushiki Kaisha. Indexing device for a step motor in an electronic timepiece. 3,783,608, Cl. 58-116.00r.
Miyazawa, Kokichi: *See—*
Yamada, Shigeki; Miyazawa, Kokichi; Naka, Hideaki; and Yoshida, Yoshio, 3,784,670.
Miyazkaki, Kenichi: *See—*
Nakada, Tetuo; Ooyama, Noboru; and Miyazkaki, Kenichi, 3,783,778.
Mizutani, Yukio; Sata, Toshikatsu; Izuo, Ryuji; and Yamane, Reiichi; deceased (by Yamane, Masako; heir), to Tokuyama Soda Kabushiki Kaisha. Process for removing electrolytes from aqueous solution. 3,784,457, Cl. 204-180.00p.
Mobil Oil Corporation: *See—*
Theissen, Robert J., 3,784,635.
Mochizuki, Nakataro, to Marunaka Tekkosho Inc. Wood slicer machine. 3,783,917, Cl. 144-175.000.
Modahl, Robert J.; and Lynch, Paul J., to Trane Company, The. Absorption heat exchange systems, methods and absorbent compositions. 3,783,631, Cl. 62-112.000.
Model, Ernst; and Bindler, Jakob, to Ciba-Geigy Corporation. Halogenated 2-acyloxy-diphenylethers as bactericides and fungicides. 3,784,694, Cl. 424-304.000.
Model, Ernst; and Dindler, Jakob, to Ciba-Geigy Corporation. Halogenated diphenylether containing compositions and control of pests therewith. 3,784,698, Cl. 424-311.000.
Modern Equipment Company: *See—*
Kaiser, Francis T.; and Schanen, Robert R., 3,784,033.
Moe, Jack M. Synchronizer for hydraulic cylinders. 3,783,620, Cl. 60-547.000.
Mohasco Industries, Inc.: *See—*
Crawford, Allan H., 3,783,65[illegible].
Mohr, Harvey O., to Hydrotech International, Inc. Hydraulic connector actuating apparatus. 3,784,234, Cl. 285-18.000.
Mohr, John Gilbert: *See—*
Arno, David Michael; and Mohr, John Gilbert, 3,784,121.
Mol, Jacob C., to Wal Vac, Inc. Wall mounted vacuum cleaner unit and method of installation. 3,783,472, Cl. 15-314.000.
Moller, Frederik Christian. Ear plug. 3,783,864, Cl. 128-152.000.
Moller, Hermann: *See—*
Andres, Rudolf; Moller, Hermann; and Seyfried, Franz, 3,784,810.
Molstad, David R. Wire lubricating device. 3,783,972, Cl. 184-15.00r.
Molzahn, Herbert W.: *See—*
Watt, J. Donald; and Molzahn, Herbert W., 3,783,594.
Monarch Marking System Company, The: *See—*
Hamisch, Paul H., Sr., 3,783,783.
Keefe, Jack D.; and Finke, Eugene W., 3,784,665.
Monarch Marking Systems, Inc.: *See—*

Dobras, Bruce W., 3,784,792.
Monsanto Company: *See—*
Chupp, John P.; and Tung, Ching C., 3,784,544.
Kirby, James Ray, 3,784,511.
Masson, James C.; and Hall, Albert M., 3,784,512.
Ort, Morris R., 3,784,539.
Paulik, Frank E., 3,784,518.
Perry, Eli; and Strazik, William F., 3,784,620.
Perry, Eli; and Strazik, William F., 3,784,624.
Perry, Eli; and Strazik, William F., 3,784,625.
Studer, James R., 3,784,658.
Moody Aquamatic Systems, Inc.: *See—*
Troglione, Vincent R., 3,784,008.
Moogk, Friedrich, to Emil und Adolf Becker KG. V-belt for a stepless variable asymmetric V-belt driving gear. 3,783,705, Cl. 74-234.000.
Moore, Clyde Maurice, to Moorex Industries, Inc. Prefabricated building components. 3,783,563, Cl. 52-11.000.
Moore, Robert E., to Sun Research and Development Co. Haloadamantanes. 3,784,615, Cl. 260-648.00r.
Moore, William A.: *See—*
Holmes, Frank; Moore, William A.; and Read, George, 3,784,274.
Moore, William Percy, to Allied Chemical Corporation. Production of potassium polyphosphates. 3,784,367, Cl. 71-36.000.
Moorex Industries, Inc.: *See—*
Moore, Clyde Maurice, 3,783,563.
Morel, Charles J.: *See—*
Frel, Jorg; Morel, Charles J.; and Wacker, Oskar, 3,784,602.
Morgan, Charles R., to Grace, W. R., & Co. Urethane, thioether-containing polyene composition and the reaction product thereof. 3,784,524, Cl. 260-77.5cr.
Morgan, Peter Ernest: *See—*
Willats, Donald James; and Morgan, Peter Ernest, 3,784,428.
Morgan, Thomas R.; Low, William W.; Wamser, Christian A.; and Bruen, Charles P., to Allied Chemical Corporation. Process for reducing the trivalent chromium content of alkali metal bisulfate solutions. 3,784,672, Cl. 423-202.000.
Morgolenko, Anatoly Sergeevich; Kononenko, Vadim Grigorievich; Fedosenko, Igor Grigorievich; Selivanov, Gennady Dmitrievich; Kushnarenko, Sergei Grigorievich; and Lepetjukha, Vladimir Semenovich. High-speed machines for shaping metals which employ the enery of high-pressure gas. 3,783,672, Cl. 72-407.000.
Mori, Chuzo. Roll memorandum device. 3,784,074, Cl. 226-127.000.
Mori Denki Manufacturing Co., Ltd.: *See—*
Mori, Shinjiro, 3,784,808.
Mori, Shinjiro, to Mori Denki Manufacturing Co., Ltd. Heat radiating device for illuminating apparatus. 3,784,808, Cl. 240-47.000.
Mori, Takaaki: *See—*
Tokuyama, Takashi; and Mori, Takaaki, 3,783,500.
Morio, Minoru; and Awata, Yoriyoshi, to Sony Corporation. Deflection yoke for use on cathode ray tube. 3,784,859, Cl. 313-75.000.
Moritan, Norishige; Moriya, Ikuro; Ura, Junichi; and Koono, Makoto, to Victor Company of Japan, Ltd. Tape auto-loading recording and reproducing apparatus. 3,784,761, Cl. 179-100.2za.
Moriya, Ikuro: *See—*
Moritan, Norishige; Moriya, Ikuro; Ura, Junichi; and Koono, Makoto, 3,784,761.
Morris, Philip, Incorporated: *See—*
Rainer, Norman B.; and Full, Donald A., 3,784,490.
Moser, Paul: *See—*
Kartschmaroff, Peter; Moser, Paul; and Berger, Kurt, 3,784,510.
Moskowitz, Arthur: *See—*
Ornitz, Martin N.; Moskowitz, Arthur; and Bressanelli, Jerome P., 3,784,373.
Moss, Gerald, to Esso Research and Engineering Company. Removing sulphur from hydrocarbons. 3,784,676, Cl. 423-242.000.
Moss, Norman: *See—*
Goodinge, Mark Wallinger; and Moss, Norman, 3,784,105.
Motegi, Shoji; Uki, Northiro; and Mito, Sadao, to Hitachi, Ltd. Device for cooling the collector portion of a rotary electric machine. 3,784,855, Cl. 310-227.000.
Motoren- und Turbine-Union: *See—*
Rossmann, Axel; and Hoffmuller, Wilhelm, 3,784,320.
Motorola, Inc.: *See—*
Rezek, John R., 3,784,923.
Spanjer, Keith G., 3,784,079.
Wisherd, David S., 3,784,932.
Zoroglu, Demir S., 3,784,884.
Mott, James D., to Hydril Company. Inside blowout preventer drilling tool. 3,783,942, Cl. 166-244.000.
Motz, Kaye L., to Continental Oil Company. Inhibition of olefin isomerization in displacement reactions. 3,784,623, Cl. 260-677.00r.
Mount Hope Machinery Company: *See—*
Gallant, James O., 3,783,481.
Moyer, Harris P., and Klein, Herbert H., to Unarco Industries, Inc. Method of constructing a hollow beam. 3,783,498, Cl. 29-471.300.
MSL Industries, Inc.: *See—*
Meitz, Frederick W., 3,783,491.
Willis, Arnold L.; and Wortman, Harold, 3,783,578.
MTL Incorporated: *See—*
Allison, Rudolph L.; and Lindstrand, Gary L., 3,783,551.
Mucha, George M.: *See—*
Laughlin, John R.; and Mucha, George M., 3,784,780.
Mueller-Eckhardt, Hans: *See—*
Adler, Jurgen; Erck, Karl; Klebba, Horst; Kramer, Wolfgang; Maneck, Ernst; Mueller-Eckhardt, Hans; and Schwenk, Kurt, 3,783,568.
Muhlbauer, Gerd Rudiger: *See—*
Erich, Reinhard; Hoffmann, Hermann; and Muhlbauer, Gerd Rudiger, 3,784,322.
Muller, Alfred: *See—*
Martens, Hans; Diepers, Heinrich; and Muller, Alfred, 3,784,452.
Muller, Manfred, to Akzon Incorporated. Method for producing rotationally symmetrical glass fiber reinforced laminated hollow structures. 3,784,429, Cl. 156-175.000.
Munchbach, Curt, to Ungerer, Irma. Apparatus for straightening metal by stretching. 3,783,667, Cl. 72-160.000.
Mund, Konrad; Richter, Gerhard; and Wenzel, Magdalena, to Siemens Aktiengesellschaft. Method for the manufacture of powdered tungsten containing electrode material. 3,784,412, Cl. 136-122.000.
Munger, Fay E.; Fife, Warren E.; and Paolini, Alfred P., to Jeffrey Galion Inc., mesne. Cutting chain link formed as integral element. 3,784,259, Cl. 299-84.000.
Munson, James L.: *See—*
Sievert, William C.; CArter, William A.; and Munson, James L., 3,783,823.
Muraoka, James S., to United States of America, Navy. Protective surfaces or liners for subaqueous structures. 3,784,357, Cl. 21-61.000.
Murphy, Charles H.; and Udy, Lex L., to Ireco Chemicals. Apparatus for preparing and packaging stick slurry explosives. 3,783,735, Cl. 86-20.00r.
Murphy, James V., to Electronic Molding Corporation. Terminal construction. 3,784,965, Cl. 339-258.00r.
Murphy, Robert P.; and Jones, Frank O., Jr., to Amoco Production Company. Minimizing clay damage in a log-inject-log procedure. 3,783,683, Cl. 73-152.000.
Murray, Myles N., to Industrial Electronic Rubber Company. High voltage anode cup. 3,784,952, Cl. 339-12.00v.
Murrell, Kenneth R.: *See—*
Barra, Frank J.; and Murrell, Kenneth R., 3,784,010.
Muschong, Peter W.: *See—*
Farmer, Donald J.; Carlson, Charles J.; and Muschong, Peter W., 3,784,733.
Musebeck, Horst: *See—*
Dilpers, Heinrich; and Musebeck, Horst, 3,783,503.
Muszumanski, Trude; and Gela, Helmut, to Vockenhuber, Karl and Hauser, Raimund. Zoom lens for super-8 film. 3,784,283, Cl. 350-184.000.
Mutze, Heinz; Barth, Gerhard; and Kertzscher, Klaus, to Veb Wirkmaschienbau Karl-Marx-Stadt. Loop transfer means for circular knitting machines. 3,783,644, Cl. 66-95.000.
Myers, Mark Stanley; and Bishop, Ronald Frederick, to Metrosound Manufacturing Company Limited. Cleaner for tape cartridge players. 3,783,470, Cl. 15-210.00r.
Nagahiro, Michinori; Yabu, Toshiomi; Hosono, Hiroo; and Ushihara, Masaharu, to Matsushita Electric Industrial Co., Ltd. Tape drive control system. 3,784,128, Cl. 242-201.000.
Nagase, Isao: *See—*
Yoshino, Takachika; Saito, Shigeru; Sobukawa, Masukuni; Nagase, Isao; Niikura, Masao; Ishikura, Jun; and Sasaki, Yutaka, 3,784,560.
Nagashima, Buemon: *See—*
Suzuki, Takenobu; Nagashima, Buemon; Inoue, Masayoshi; and Ito, Yoji, 3,784,904.
Nagel, Dietmar: *See—*
Summersby, E. John; and Nagel, Dietmar, 3,783,867.
Nagler, Robert T., to Bergstrom Paper Company. Paper coating compositions. 3,784,596, Cl. 260-23.00r.
Nahm, Helmut; and Siedel, Walter; deceased (by Siedel, Helene Elise, nee Graf; heiress), to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Pharmaceutical composition containing phenoxyalkane-carboxylic acids, salts and esters thereo. 3,784,697, Cl. 424-309.000.
Naik, Navnitrai Nagarji: *See—*
Desai, Nalin Binduprasad; Jayaraman, Ponnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, 3,784,559.
Naka, Hideaki: *See—*
Yamada, Shigeki; Miyazawa, Kokichi; Naka, Hideaki; and Yoshida, Yoshio, 3,784,670.
Nakada, Tetuo; Ooyama, Noboru; and Miyazkaki, Kenichi, to Janome Sewing Machine Co., Ltd. Data indicating device for printing machines. 3,783,778, Cl. 101-45.000.
Nakade, Sadao; Kubota, Hirosuke; Oshita, Toshiyuki; and Sakane, Kuniyoshi, to Kabushiki Kaisha Takenaka. Method of providing a pile in a ground formation having a high resistance to movement. 3,783,624, Cl. 61-36.00r.
Nakamura, Hisao: *See—*
Yamamoto, Katsuo; Sato, Hideo; Iwasa, Toshio; Nakamura, Hisao; and Adachi, Katsuhiro, 3,783,649.
Nakamura, Soichi, to Nippon Kogaku K.K. Zoom lens system for close up photography. 3,784,284, Cl. 350-186.000.
Nakanishi, Michio: *See—*
Yamano, Togo; Jono, Kumiko; Sato, Shigehiko; and Nakanishi, Michio, 3,784,699.
Nakanishi, Michio; Arimura, Katsuo; and Ao, Hideki, to Yoshitomi Pharmaceutical Industries, Ltd. 2-Oxo-1,4-dioxa-8-

azaspiro(4.5)decanes and related compounds. 3,784,551, Cl. 260-293.660.

Nakatani, Hiroshi: *See—*
Eukumaru, Toshitsugu; Hamma, Noritaka; Nakatani, Hiroshi; Fukushima, Hideaki; and Toki, Katsuyuki, 3,784,577.

Nakayama, Akira: *See—*
Araki, Yoshitoshi; Yanagisawa, Yuzuru; and Nakayama, Akira, 3,784,862.

Nakayama, Kiyoshi; and Tanaka, Haruo, to Kyowa Hakko Kogyo Co., Ltd. Process for producing 2-substituted 6-amino purine ribotides. 3,784,444, Cl. 195-28.00n.

Namikawa, Mamoru; and Arai, Kaneyoshi, to Tokyo Magnetic Printing Company, Ltd. Magnetic card. 3,784,796, Cl. 235-61.12m.

Nastasi, Gaetano. Device for extracting and for inserting bearings in a roller skate wheel. 3,783,485, Cl. 29-201.000.

Nathanson, Albert. Light-on target game. 3,784,203, Cl. 273-126.00a.

National Bank of Commerce of Seattle, mesne: *See—*
Allais, David C., 3,784,794.

National Patent Development Corporation: *See—*
Kliment, Karel; and Rutherford, John M., Jr., 3,784,540.

National Research Development Corporation: *See—*
Cunningham, Sinclair Upton, 3,783,748.
Cunningham, Sinclair Upton; and Wells, James Rutherford, 3,783,749.
Dawson, Robert Graham; and Sansome, Dennis Hugh, 3,783,668.
Jilbert, Phillip Harvey, 3,784,920.

Natter, Howard. Image reproduction system for dimensional stereoptic perception. 3,784,738, Cl. 178-6.500.

Naumann, Siegfried; Lauchner, Manfred; Golbs, Christian; and Schubert, Harry, to Veb Wirkmaschinenbau Karl-Marx-Stadt. Holder having slide needles mounted therein for knitting machines. 3,783,646, Cl. 66-120.000.

Nautical Electronic Laboratories Limited: *See—*
Covill, Dennis H., 3,784,931.

Nawa, Motoyuki: *See—*
Amagami, Keizo; Nishijyo, Masaru; Takahashi, Yutaka; and Nawa, Motoyuki, 3,783,904.

Neale, Robert Schwenn, to Union Carbide Corporation. Allylic substitution of olefins. 3,784,609, Cl. 260-611.00r.

Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid, Handel en Verkeer: *See—*
Van Staveren, Pieter, 3,784,324.

Neidinger, William K., to Amos-Thompson Corporation. Melt blended polyethylene-ethylene copolymer polyblends. 3,784,668, Cl. 264-310.000.

Nekrasov, Konstantin Dmitrievich; Tarasova, Alexandra Petrovna; Bljusin, Alfred Avgustovich; Avdeeva, Tamara Petrovna; Elin, Vyacheslav Alexandrovich; Roizman, Pavel Aronovich; and Denisenko, Alexandr Panteleevich. Method of preparing mix for producing refactory gas concrete and the product obtained thereby. 3,784,385, Cl. 106-40.00r.

Nelson, Gunner E.; and Pearson, Tillmon H., to Ethyl Corporation. α,α' Carboxyalkoxy succinic acid compounds as detergent builders and sequestering agents. 3,784,486, Cl. 252-546.000.

Nelson, James E. Fluid pressure actuated switch with prestressed diaphragm. 3,784,772, Cl. 200-83.00y.

Nelson, William Junior; and Hinman, Charles William; deceased (by Deitchler, Roy W.; administrator), to Standard Brands Incorporated. Process for purifying glucose syrups containing fructose. 3,784,409, Cl. 127-46.00a.

Nemchik, Joseph Michael, to Bell Telephone Laboratories, Incorporated. Subscriber loop range extender. 3,784,756, Cl. 179-16.00f.

Nemec, John E., to General Tire & Rubber Company, The. Energy absorbing buckling box. 3,784,181, Cl. 267-140.000.

Neu, John P., to GTE Automatic Electric Laboratories Incorporated. Matrix assembly. 3,784,878, Cl. 317-101.0ce.

Neudek, Rudolph Otto: *See—*
Rachlin, Joel R.; and Neudek, Rudolph Otto, 3,784,141.

Neuman, Richard L., 1/2 to Laitram Corporation, The. Combination mobile shelter and separable recreational equipment carrying trailer. 3,784,248, Cl. 296-23.00b.

Neumann, Henry O.: *See—*
McNally, John P.; and Neumann, Henry O., 3,783,983.

Newbold, Thomas, to TRW Inc. Connector for insulated conductors and method for manufacturing said connector. 3,784,731, Cl. 174-87.000.

Newcombe, Jack: *See—*
Dotson, Anderson O., Jr.; Newcombe, Jack; and Wolford, Lionel T., 3,784,509.

Newell, Cyril, to United Kingdom of Great Britain & Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the. Ejector release units. 3,784,132, Cl. 244-137.00r.

Newinger, Vann O. Heating device. 3,783,855, Cl. 126-25.00r.

Newman, Albert P.; and Haun, Clem Edward, to Empire Products, Inc. Electrical connector with retainer means. 3,784,964, Cl. 339-219.00r.

Nicco, Adrien: *See—*
Fourment, Marie-Claude Gloriod; and Nicco, Adrien, 3,784,396.

Nicholson, John Stuart: *See—*
Adams, Stewart Sanders; Armitage, Bernard John; Nicholson, John Stuart; and Ribera, Antonio, 3,784,705.

Nicholson Manufacturing Company: *See—*
Nicholson, Thomas W.; Jorgensen, Ray B.; and Vanek, Stanley Donald, 3,783,916.

Nicholson, Thomas W.; Jorgensen, Ray B.; and Vanek, Stanley Donald, to Nicholson Manufacturing Company. Chipper chip-removing structure. 3,783,916, Cl. 144-172.000.

Nicklin, Norman Brian, to British Industrial Plastics, Limited. Moulding process. 3,784,664, Cl. 264-246.000.

Nicklin, Thomas; and Farrington, Frederick, to Gas Council, The. Treatment of gases and liquids. 3,784,465, Cl. 208-208.00r.

Nickrawietz, Kurt, to Eumuco Aktiengesellschaft fur Maschinenbau. Apparatus for the transfer of workpieces in a multipage press for the cold deformation by means of cold extrusion and the like. 3,783,670, Cl. 72-346.000.

Nicolay, Klaus: *See—*
Wagner, Karl; and Nicolay, Klaus, 3,783,759.

Niconchuk, Alec W. Tire repair tools. 3,783,715, Cl. 81-15.700.

Niebylaski, Leonard M.: *See—*
Kobetz, Paul; and Niebylaski, Leonard M., 3,784,423.

Niebylski, Leonard M., to Ethyl Corporation. Densifying metal hydrides with high temperature and pressure. 3,784,682, Cl. 423-645.000.

Nielson, Richard P. Wall construction blocks and mortarless method of construction. 3,783,566, Cl. 52-232.000.

Niikura, Masao: *See—*
Yoshino, Takachika; Saito, Shigeru; Sobukawa, Masukuni; Nagase, Isao; Niikura, Masao; Ishikura, Jun; and Sasaki, Yutaka, 3,784,560.

Niitu, Moritada; and Ide, Toshio, to Tokyo Shibaura Electric Company, Ltd. Machine for performing work. 3,784,031, Cl. 214-1.0bc.

Nijssen, Jozef: *See—*
Franck, Heinz-Gerhard; Metzendorf, Walter; Schweym, Erich; Beneke, Herbert; Marrett, Rolf; Nijssen, Jozef; and Omran, Jaafar, 3,784,487.

Nikolai, Gerhard. Cabinet construction. 3,784,273, Cl. 312-257.0sk.

Nimoda, Toyoo: *See—*
Takayanagi, Shigenao; and Nimoda, Toyoo, 3,784,187.

Nippon Automation Kiki Co., Ltd.: *See—*
Shoji, Akira, 3,783,887.

Nippon Electric Varian, Ltd.: *See—*
Sakai, Tadashi; Sakimura, Masahiko; and Ino, Yoichi, 3,784,814.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Ihara, Yasuharu, 3,783,732.
Okamoto, Eisaku, 3,784,717.
Uchiyama, Yasuji, 3,784,718.

Nippon Kagaku K.K.: *See—*
Sugimori, Shiro, 3,783,762.

Nippon Kayaku Co., Ltd.: *See—*
Yosioka, Satosi; Tokunaga, Sinobu; Tamenori, Tomoyoshi; Tamura, Sigeru; and Wada, Morio, 3,784,534.

Nippon Kogaku K.K.: *See—*
Nakamura, Soichi, 3,784,284.

Nippon Oils and Fats Company Limited: *See—*
Hayashi, Keizo, 3,783,788.

Nippondenso Co., Ltd.: *See—*
Ito, Katsunori; and Imai, Shinichiro, 3,784,793.

Nishida, Hiroshi; Yamamoto, Masao; Kitai, Atsuo; Ozaki, Asaichiro; Nishimura, Yokio; Takemi, Hiroto; and Takemi, Chimo, to Ajinomoto Co., Inc. and Sansaku Ocean Co., Ltd. Method of producing L-glutamic acid by fermentation of aromatic organic compounds. 3,84,446, Cl. 195-30.000.

Nishijyo, Masaru: *See—*
Amagami, Keizo; Nishijyo, Masaru; Takahashi, Yutaka; and Nawa, Motoyuki, 3,783,904.

Nishimura, Yokio: *See—*
Nishida, Hiroshi; Yamamoto, Masao; Kitai, Atsuo; Ozaki, Asaichiro; Nishimura, Yokio; Takemi, Hiroto; and Takemi, Chimo, 3,784,446.

Nishina, Rintaro: *See—*
Ochiai, Jiru; and Nishina, Rintaro, 3,783,602.

Nissan Motor Company, Limited: *See—*
Hosaka, Akio, 3,784,841.
Sato, Takakazu; and Masago, Takaya, 3,784,172.

Nitanda, Hiroshi: *See—*
Ito, Yoshio; Katayama, Hajime; Nitanda, Hiroshi; and Yamaguchi, Masaru, 3,784,297.

Nitto Chemical Industry Co., Ltd.: *See—*
Yoshino, Takachika; Saito, Shigeru; Sobukawa, Masukuni; Nagase, Isao; Niikura, Masao; Ishikura, Jun; and Sasaki, Yutaka, 3,784,560.

Nitz, Jurgen: *See—*
Ertl, Dietrich; Eishold, Horst-Gunter; Gilles, Helmut; Schmolling, Gunther; Steuernagel, Walter; and Nitz, Jurgen, 3,783,589.

Niwa, Hideo, to Yuken Kogyo Limited. Solenoid assembly. 3,784,882, Cl. 317-157.000.

NL Industries, Inc.: *See—*
Koch, Byron W., 3,784,089.
Kruse, Uno; and Herman, Daniel F., 3,784,391.

Noble, Arthur J.; Speicher, Edwin W.; and Speicher, Walter J., to Cunningham, M. E., Company. Automatic marking device for metal objects. 3,783,776, Cl. 101-7.000.

Noguchi, Takashi. Method of making a flexible closure. 3,784,432, Cl. 156-244.000.

Noland, Wayne B. Electrically heated fluid conduit coupler. 3,784,785, Cl. 219-301.000.

Noly, Jean, to Potain, Chevilly, Larue (val de Marne). Speed selector, in particular for cranes or hoisting gears. 3,784,852, Cl. 310-105.000.

Nomura, Katsuhiko: *See—*
Uno, Naoyuki; Nomura, Katsuhiko; Sakazaki, Tadazumi; Watanabe, Koichiro; Miyata, Katsuhiko; and Urano, Fumio, 3,783,765.

Norman, Leslie W.; Hunter, Skillman C.; and Russell, George A., to Garrett Corporation, The. Control method for detonation combustion engines. 3,783,616, Cl. 60-204.000.

Norrie, George Ogilvie, to Landis Tool Company. Capacitor transducer. 3,784,897, Cl. 323-93.000.

Northern Electric Company Limited: *See—*
DeBortoli, George; and Lukas, Helmut Hans, 3,784,728.

Northrop Corporation: *See—*
Crandall, Walter E.; and Curtis, Orlie L., Jr., 3,784,799.

Northwestern Corporation, The: *See—*
Bolen, Waldo B., 3,783,986.

Norton Company: *See—*
King, Alan G.; and Logan, John C., 3,784,388.

Norton Villiers Limited: *See—*
Hopper, Bernard, 3,783,961.

Notelteirs, Victor Rosallie; and Goorissen, Jan, to U.S. Philips Corporation. Lamp with opaque screen. 3,784,861, Cl. 313-117.000.

Novak, Joseph F. Method and apparatus for converting monochrome pictures to multi-color pictures electronically. 3,784,736, Cl. 178-5.40r.

Nowak, Bernard E.: *See—*
Economy, James; Cottis, Steve G.; and Nowak, Bernard E., 3,784,405.

Nutter, Donald J., 25% to Seward, Gordon B. Wheel supported exercising device. 3,784,192, Cl. 272-57.00j.

N.V. Bekaert S.A.: *See—*
Bruggeman, Frans; and Smit, Jacobus C., 3,784,044.

N.V. Werkspoor: *See—*
DeVos, Ferdinand Allard; and Ter Steege, Jan Hendrik, 3,784,739.

Nylund, Knut, to Maschinenfabrik Oerlikon. Apparatus for hardening winding insulation. 3,784,350, Cl. 425-445.000.

Obata, Yoshiharu: *See—*
Minami, Hiroshi; Ando, Masao; and Obata, Yoshiharu, 3,784,741.

O'Brien, Edward M. Extensible and retractable support. 3,784,142, Cl. 248-311.000.

O'Brien, Eugene. Portable tool for drilling holes in hardened steel. 3,784,315, Cl. 408-92.000.

Ochiai, Jiru; and Nishina, Rintaro, to Tamura Electric Works, Ltd. Optical time display device having intermittent drive. 3,783,602, Cl. 58-50.00r.

O'Connor, William Raymond. Hockey helmet. 3,783,450, Cl. 2-3.00r.

Oellig, Rudi: *See—*
Jellinek, Karl; Post, Udo; Gieben, Wibmar Uber; and Oellig, Rudi, 3,784,601.

Ogasawara, Shoji; Tamate, Teruzo; and Sonobe, Toshimitsu, to Alps Electric Co. Ltd. Preset device for UHF tuner. 3,783,698, Cl. 74-10.200.

Ogasawara, Tatsuo: *See—*
Sasaki, Rentaro; Watanabe, Akinori; Ogasawara, Tatsuo; Watanabe, Satosh; and Sogabe, Hidetoshi, 3,784,864.

Ogawa, Kiyoshi; Yokoyama, Yoshiaki; and Fukushima, Yoshio, to Kabushiki Kaisha Ricoh. Six-bar linkage having symmetrical displacement curve. 3,783,706, Cl. 74-469.000.

Ogden, Stanley E. Fish escalator. 3,783,623, Cl. 61-21.000.

Ohmayer, Siegfried: *See—*
Knapp, Wilhelm; and Ohmayer, Siegfried, 3,783,984.

Ohsawa, Mitsuo, to Sony Corporation. All-pass phase-shift circuit. 3,784,934, Cl. 333-29.000.

Okada, Masashi: *See—*
Hijimoto, Takehiki; Okada, Masashi; and Inque, Higashiyama, 3,784,597.

Okamoto, Eisaku, to Nippon Gakki Seizo Kabushiki Kaisha. Group teaching system for musical instruments incorporated with information exchanging arrangement between a teacher station and a plurality of student stations. 3,784,717, Cl. 84-470.000.

Okamura, Masahiro: *See—*
Miyata, Kenji; and Okamura, Masahiro, 3,784,886.

Okamura, Shiro: *See—*
Hagiwara, Isamu; and Okamura, Shiro, 3,784,754.

Okano, Takeshi, to Fuji Shashin Film Kabushiki Kaisha. Pressure plate means for projectors and the like. 3,784,295, Cl. 353-95.000.

Okaya Electric Industry Company: *See—*
Sasaki, Rentaro; Watanabe, Akinori; Ogasawara, Tatsuo; Watanabe, Satosh; and Sogabe, Hidetoshi, 3,784,864.

Okazawa, Masao: *See—*
Matsumoto, Ikuo; and Okazawa, Masao, 3,784,632.

Oki Electric Industry Company Ltd.: *See—*
Sasaki, Rentaro; Watanabe, Akinori; Ogasawara, Tatsuo; Watanabe, Satosh; and Sogabe, Hidetoshi, 3,784,864.

Oklahoma State University: *See—*
Maciula, L. Andrew, 3,784,009.

Okudaira, Hiromi: *See—*
Takahashi, Shogo; Yamada, Takayasu; and Okudaira, Hiromi, 3,784,366.

Okumura, Kentaro; Matsumoto, Kazuo; and Suzuki, Mamoru, to Tanabe Seiyaku Co., Ltd. Process for preparing alpha-methyl-beta-(3,4-dihydroxyphenyl-alanine. 3,784,640, Cl. 260-519.000.

Olander, Karl Erik, to Alfa-Laval AB. Milking machine. 3,783,837, Cl. 119-14.080.

Olin Corporation: *See—*
Pregler, John E., 3,784,503.

Oliphant, Melvain, to Singer Company, The, mesne. Variable visibility simulator. 3,784,720, Cl. 35-12.00n.

Oliveri, Humber: *See—*
Wyman, Dennis G.; Bichell, William J.; and Oliveri, Humber, 3,784,201.

Ollinger, James C.: *See—*
Hartzell, Lyndon G.; and Ollinger, James C., 3,783,771.

Ollinger, James C.; and Shenk, John W., to Armstrong Cork Company. Ceiling system suspension clip. 3,784,144, Cl. 248-317.000.

Ollis, William J. B., to Timber Research and Development Association. Glazing strip. 3,783,567, Cl. 52-232.000.

Olsen, Willi, to Siemens Aktiengesellschaft. High-voltage piston actuated switch with rotational symmetry and light beam indicating means. 3,784,771, Cl. 200-82.00b.

Oltersdorf, Winfried, to Siemens Aktiengesellschaft. Disconnect switch. 3,784,767, Cl. 200-48.00v.

Olympus Optical Co., Ltd.: *See—*
Kimura, Katsuhiko, 3,784,833.

Omran, Jaafar: *See—*
Franck, Heinz-Gerhard; Metzendorf, Walter; Schweym, Erich; Beneke, Herbert; Marrett, Rolf; Nijssen, Jozef; and Omran, Jaafar, 3,784,487.

Ooyama, Noboru: *See—*
Nakada, Tetuo; Ooyama, Noboru; and Miyazkaki, Kenichi, 3,783,778.

Opti-Holding AG: *See—*
Frohlich, Alfons, 3,783,476.

Ornitz, Martin N.; Moskowitz, Arthur; and Bressanelli, Jerome P., to Crucible Inc. Austenitic stainless steel. 3,784,373, Cl. 75-128.00f.

Orshansky, Elias, Jr., to Orshansky Transmission Corporation, mesne. Plural range transmission. 3,783,711, Cl. 74-687.000.

Orshansky Transmission Corporation, mesne: *See—*
Orshansky, Elias, Jr., 3,783,711.

Ort, Morris R., to Monsanto Company. Process for the polymerization of olefins. 3,784,539, Cl. 260-94.90c.

Orthuber, Richard Kaspar, to International Telephone and Telegraph Corporation. Method of laminating one or more materials with a base structure for use in a high vacuum electron tube and method of masking the ease preparatory to lamination. 3,784,379, Cl.96-36.200.

Osborn, Robert A.; St. Cyr, David R.; and Bullard, Herbert L., to Goodyear Tire & Rubber Company, The. Hydrocarbon-derived resin. 3,784,530, Cl. 260-80.700.

Osborne, Brian Frank: *See—*
Grothe, John; and Osborne, Brian Frank, 3,783,695.

Oshita, Toshiyuki: *See—*
Nakade, Sadao; Kubota, Hirosuke; Oshita, Toshiyuki; and Sakane, Kuniyoshi, 3,783,624.

Osterberg, Arnold Curtis: *See—*
Cohen, Elliott; Sloboda, Adolph Edward; Osterberg, Arnold Curtis; and Child, Ralph Grassing, 3,784,704.

Osterhout, Florence. Hand tool for use in making tufted yard goods. 3,783,478, Cl. 28-2.000.

Ostrowski, Edwin A.; and De Lew, Charles A., to Controls Company of America. Water valve disphragm. 3,784,154, Cl. 251-30.000.

Oswald, Jacques; and Rainsard, Yves, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Apparatus for improving the signal-to-noise ratio of a received signal. 3,784,915, Cl. 325-367.000.

Oswald, Robert D.: *See—*
Brush, Donald C.; and Oswald, Robert D., 3,783,998.

Oszlanyi, Anial G.; and Zielinski, Richard J., to SCM Corporation. Polyoxyalkylene derivatives of polyglycerol esters as dough conditioners. 3,784,709, Cl. 99-91.000.

Ota, Akira: *See—*
Watanabe, Jun; Hosoi, Susmu; Kuwazaki, Masahiro; Ota, Akira; Takata, Toshikatsu; and Asaoka, Junichi, 3,784,413.

Otis, George A.; and Gores, Kenneth W. Apparatus for facilitating application of fluids. 3,784,063, Cl. 222-394.000.

Otte, Eginhart; and Jentzsch, Dietrich, to Bodenseewerk Perkin-Elmer & Co., GmbH. Punch for piercing sample capsules. 3,783,694, Cl. 73-422.0gc.

Otto, Jack M., to PPG Industries, Inc. Apparatus and method for purifying alkali metal hydroxide solutions. 3,784,456, Cl. 204-153.000.

Otto, Stanley W.: *See—*
Greenwood, Aaron O.; Magee, Ramon J.; and Otto, Stanley W., 3,783,779.

Owen, Ronald Charles, to Illinois Tool Works Inc. Multiple container carrier and individual container lid arrangement. 3,784,002, Cl. 206-65.00c.

Owen, Willaim S., Jr., to Eastman Kodak Company. Elevation mechanism. 3,784,135, Cl. 248-11.000.

Owens-Illinois, Inc.: *See—*
Bayer, John W.; and Santiago, Edgardo, 3,784,529.
Potter, Terry C.; and Rhoads, Roger R., 3,784,261.
Southwell, William H.; and Walters, Richard M., 3,784,308.
Uhlig, Albert R., 3,783,724.
Uhlig, Albert R., 3,784,038.

Oxenrider, Bryce C.; Beyleveld, Wilhelmus M.; and Woolf, Cyril, to Allied Chemical Corporation. Process for preparing fluoroperhaloalkylidene imines. 3,784,644, Cl. 260-566.00r.

Ozaki, Asaichiro: *See—*

Nishida, Hiroshi; Yamamoto, Masao; Kitai, Atsuo; Ozaki, Asaichiro; Nishimura, Yokio; Takemi, Hiroto; and Takemi, Chimo, 3,784,446.

Pabst, Wolfgang: *See—*
Schadebrodt, Gerhard; Altzschner, Gustav; Feldmann, Hans-Helmut; Graichen, Bernhard; and Pabst, Wolfgang, 3,783,741.

Packham, Charles Christopher: *See—*
Brown, Norman Joseph; Packham, Charles Christopher; and Parsonage, Raymond Graham, 3,783,508.

Paetzel, Herbert; and Pfeiffer, Horst, to Masoneilan International, Inc. Valve. 3,784,156, Cl. 251-250.000.

Paisley, George C.; and Tier, Fred G., to Milprint, Inc. Method of laminating packaging film. 3,784,434, Cl. 156-280.000.

Pall Corporation: *See—*
Pall, David B., 3,783,969.

Pall, David B., to Pall Corporation. Acoustic insulation comprising anisometric compressed and bonded multilayer knitted wire mesh composites. 3,783,969, Cl. 181-33.00g.

Pan-American Records (Casa Pan Americana) Inc.: *See—*
Frenkel, Marshall S., 3,784,269.

Paolini, Alfred P.: *See—*
Munger, Fay E.; Fife, Warren E.; and Paolini, Alfred P., 3,784,259.

Papa, Anthony Joseph; and Proops, William Robert, to Union Carbide Corporation. Cellular material produced from copolymers of cyclic vinyl ethers and cyclic acetals. 3,784,594, Cl. 260-2.5am.

Parikh, Girish D.; and Willard, William C., to Western Electric Company, Incorporated. Methods of electrolytic regenerative etching and metal recovery. 3,784,455, Cl. 204-130.000.

Park-Ohio Industries, Inc.: *See—*
Laughlin, John R.; and Mucha, George M., 3,784,780.

Parke, Davis & Company: *See—*
Culbertson, Townley P.; and Haskell, Theodore H., 3,784,541.

Parker, Richard G., to Goodrich, B. F., Company, The. Stabilizers for chlorine-containing polymers. 3,784,565, Cl. 260-482.00r.

Parlevliet, Theodor, to Siemens Aktiengesellschaft. Pivoted, segmental, thrust bearing providing simulated offset support of centrally supported bearing segments. 3,784,266, Cl. 308-160.000.

Paros, Jerome M. Absolute pressure transducer. 3,783,693, Cl. 73-398.00c.

Parr, Edward L. Instrument for indicating time. 3,783,598, Cl. 58-2.000.

Parr, Edward L., to Thompson, Wendell L. Tool holder. 3,783,729, Cl. 83-666.000.

Parsonage, Raymond Graham: *See—*
Brown, Norman Joseph; Packham, Charles Christopher; and Parsonage, Raymond Graham, 3,783,508.

Parth, William H., to Dow Chemical Company, The. Analytical apparatus. 3,784,359, Cl. 23-253.0pc.

Pash, James E. Chromatic multiple stringed musical instrument. 3,783,731, Cl. 84-173.000.

Pass, Roger D. Lather dispensing shaving instrument. 3,783,511, Cl. 30-41.000.

Pastva, John V., Jr., to Eastern Company, The. Door stabilizer. 3,784,243, Cl. 292-300.000.

Patent-Freuhand-Gesellschaft fur elektrische Gluhlampen mbH: *See—*
Rudolph, Joseph, 3,784,927.

Patfoort, George Arthur Rodolf. Injection. 3,784,065, Cl. 222-413.000.

Patliff, Edmond Lewis. Nesting place for purple martin. 3,783,831, Cl. 119-23.000.

Paton, Jim: *See—*
Ragard, Phillip A.; and Paton, Jim, 3,783,488.

Patterson, John A., to Texaco Inc. Process for preparing dialkylaminoethyl methacrylate. 3,784,566, Cl. 260-486.00r.

Paulik, Frank E., to Monsanto Company. Method for producing alkyl iodides. 3,784,518, Cl. 260-65.00f.

Pavlov, Nikolai Ivanovich: *See—*
Kusovsky, Boris Isaakovich; Pavlov, Nikolai Ivanovich; Mattichenko, Anatoly Petrovich; Zakharov, Sergei Alexandrovich; and Kirilin, Anatoly Fedorovich, 3,784,461.

Payeur, Marcel, to Forano Limitee. Mechanical shears. 3,783,725, Cl. 83-326.000.

Peabody Engineering Corporation: *See—*
Arnold, Orlan M.; and Vancini, Carlo A., 3,784,017.
Gordon, George, 3,784,019.

Pearl, Curt Charles, to APL Corporation. Bag with bail handle. 3,784,084, Cl. 229-54.00r.

Pearlman, Alan R.; and Colin, Dennis P., to ARP Instruments, Inc. Touch sensitive polyphonic musical instrument. 3,784,935, Cl. 333-70.0cr.

Pearson, Tillmon H.: *See—*
Nelson, Gunner E.; and Pearson, Tillmon H., 3,784,486.

Pease, Logan L., to Eaton Corporation, mesne. Optical addressing system. 3,784,791, Cl. 235-61.11e.

Pechiney-Saint-Gobain: *See—*
Thomas, Philippe; and Meyer, Jacques, 3,784,586.

Pedersen, Nicholas F., to Sperry Rand Corporation. Power transmission. 3,784,328, Cl. 417-222.000.

Peeler, Donald H., to Irvin Industries Inc. Passenger safety device. 3,784,224, Cl. 280-150.00b.

Pegg, Claude L.: *See—*
Pegg, Claude L.; and Pegg, John L. (said Pegg, John L., assor to said), 3,783,897.

Pegg, Claude L.; and Pegg, John L., said Pegg, John L., assor to said Pegg, Claude L. Warm liquid supply system for reservoir and mixing valve therefor. 3,783,897, Cl. 137-564.000.

Pegg, John L.: *See—*
Pegg, Claude L.; and Pegg, John L., 3,783,897.

Peilstocker, Gunter: *See—*
Schirmer, Hermann; and Peilstocker, Gunter, 3,784,595.

Pelat, Patrice, to International Vibration Engineering and Avions Marcel Dassault. Recoil absorber. 3,783,738, Cl. 89-44.00r.

Pelletier, Guy, to Rockland Industries Ltd. Replacement tread band for retreading a worn tire. 3,783,924, Cl. 152-330.000.

Pelorex Corporation: *See—*
Riesenberg, James H.; and Rait, Joseph M., 3,783,576.

Pelte, Richard: *See—*
Winkler, Alfred; Pelte, Richard; Huber, Theodor; and Mayr, Helmut, 3,784,292.

Pelts, Cecil A. Fluid actuated jacking frame. 3,784,029, Cl. 212-14.000.

Pennwalt Corporation: *See—*
Cassella, Vincent Joseph, Jr., 3,784,400.
Hutchinson, Herman R.; Arpajian, Vasken F.; and Malcomson, Robert S., 3,784,657.

Penote, Vincent S.; and Rear Melvin K., to Cleveland Trencher Company, The. Plow assembly for excavating machine. 3,783,537, Cl. 37-94.000.

Pera, John D.: *See—*
Buckman, Stanley J.; Pera, John D.; Raths, Fred W.; and Mercer, Gerald D., 3,784,649.

Perez, John L., to Dunham-Bush, Inc. Replaceable defrost heater for fin and tube evaporator and spring retaining clip for same. 3,783,635, Cl. 62-276.000.

Perignon, Philippe, to Eastman Kodak Company. High speed silver chloroiodide emulsions. 3,784,381, Cl. 96-94.000.

Peritt, Harvey L.: *See—*
Kessler, Hyman; and Peritt, Harvey L., 3,784,235.

Perkins, Carroll R.; and Lucks, Irwin A., to Solitron Devices Inc. Electronic hybrid package. 3,784,725, Cl. 174-52.00r.

Peron, Roger J. Time division data transmission system. 3,784,752, Cl. 179-15.0aq.

Perrine, James J. Bilateral reciprical isokinetic exerciser. 3,784,194, Cl. 272-79.00c.

Perrine, Walter E. Gun toggle mechanism with biasing means positioned in predetermined area on toggle to absorb shell explosive reactive forces. 3,783,739, Cl. 89-189.000.

Perrott, Francis Cyric: *See—*
Perrott, Francis Cyric; and Aitkey, Ian Miller Edington (said Aitken assor. to said), 3,783,793.

Perrott, Francis Cyric; and Aitkey, Ian Miller Edington, said Aitken assor. to said Perrott, Francis Cyric. Track system having non-load bearing track switch. 3,783,793, Cl. 104-130.000.

Perry, Eli; and Strazik, William F., to Monsanto Company. Process for the separation of styrene from ethylbenzene. 3,784,620, Cl. 260-669.00a.

Perry, Eli; and Strazik, William F., to Monsanto Company. Process for the separation of diene from organic mixtures. 3,784,624, Cl. 260-681.50r.

Perry, Eli; and Strazik, William F., to Monsanto Company. Process for the separation of diene from organic mixtures. 3,784,625, Cl. 260-681.50r.

Perry, Roger L., to Gillette Company, The. Strip feed safety razor. 3,783,507, Cl. 30-40.100.

Persson, Eric Sigrid; and Persson-Melin, Signe Harriet, to Expo Nord AB. Furniture assemblies. 3,784,251, Cl. 297-248.000.

Persson-Melin, Signe Harriet: *See—*
Persson, Eric Sigrid; and Persson-Melin, Signe Harriet, 3,784,251.

Peter, Richard; and Jenny, Walter, to Ciba-Geigy AG. Styralyl dyestuffs. 3,784,558, Cl. 260-465.00d.

Peters, James R., to Universal Product Development Corporation. Self-watering flower pot. 3,783,555, Cl. 47-38.000.

Peterson, Arnie J.; and Hoffa, Jack L., to Beckman Instruments, Inc. Sample cell and stirrer therefor. 3,784,170, Cl. 259-65.000.

Peterson, Arnold E., to Peterson Baby Products Co. Seat back adjustment mechanism for baby products. 3,784,252, Cl. 297-364.000.

Peterson Baby Products Co.: *See—*
Peterson, Arnold E., 3,784,252.

Peterson, Donald J., to Procter & Gamble Company, The. Organosulfonylmethyl(trihydrocarbyl) tin compounds. 3,784,580, Cl. 260-429.700.

Petigara, Ramesh: *See—*
Yale, Harry L.; and Petigara, Ramesh, 3,784,548.

Petigara, Ramesh B.: *See—*
Yale, Harry L.; and Petigara, Ramesh B., 3,784,549.
Yale, Harry L.; and Petigara, Ramesh B., 3,784,550.

Petrinec, Joan A.: *See—*
Petrinec, Robert G.; and Petrinec, Joan A., 3,783,946.

Petrinec, Robert G.; and Petrinec, Joan A. Self-contained automatic sequencing fire extinguishing system. 3,783,946, Cl. 169-2.00a.

Petrus, Stephen, to Eaton Corporation. Blind mounting fastener. 3,783,922, Cl. 151-41.740.

Petry, Eston, to Consolidation Coal Company. Level wind spooling device with a stabilizing housing. 3,784,126, Cl. 242-158.300.

Pettit, Paul H., Jr., to Du Pont de Nemours, E. I., and Company. Acrylic polyblend powder coating composition. 3,784,501, Cl. 260-31.600.

Petty, Walter L.: *See—*

Rocklin, Albert L.; and Petty, Walter L., 3,784,422.

Petzsch, Lothar: *See—*
Backstein, Gunter; and Petzsch, Lothar, 3,783,791.

Pfaffendorf, James L.; and Johnson, Marlyn D., to Liberty Carton Co. Tote tray. 3,784,083, Cl. 229-34.00r.

Pfannmueller, Helmut; Urban, Friedrich; Buechner, Oskar; Gropper, Hans; and Sistig, Wolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Controlling a high-pressure reactor. 3,784,538, Cl. 260-94.90r.

Pfeiffer, Horst: *See—*
Paetzel, Herbert; and Pfeiffer, Horst, 3,784,156.

Pfiefer, Ernest L.: *See—*
Schmedding, Albert A.; and Pfiefer, Ernest L., 3,783,811.

Pfister, Rudolf: *See—*
Fitzi, Konrad; and Pfister, Rudolf, 3,784,691.

Pfizer Inc.: *See—*
Holland, Gerald F.; and Lombardino, Joseph G., 3,784,606.

Philco-Ford Corporation: *See—*
Kenyon, Roger Y., 3,784,917.
Richardson, John Lloyd; Segovia, Gilbert; Ju, Fred; and Bachle, Wilfred Hugo, 3,784,470.

Phillips, Clyde G. Refrigeration system. 3,783,629, Cl. 62-85.000.

Phillips, David P., to Wildwood Products, Inc. Vehicle support system. 3,784,160, Cl. 254-86.00r.

Phillips Petroleum Company: *See—*
Alquist, Henry E., 3,783,619.
Bertus, Brent J., 3,784,627.
Chapman, Charles C., 3,784,628.
Cichowski, Robert S., 3,784,483.
Farrar, Ralph C., 3,784,637.
Kuper, Donald G., 3,784,639.
Robinson, Leroy E., 3,784,347.

Phillips, Richard F.; and Fluharty, Gordon S. Protective boot. 3,783,534, Cl. 36-72.00r.

Picker Corporation: *See—*
Martone, Ronald J.; Goldman, Samuel C.; and Heaton, Clifford C., 3,784,819.

Picker Corporation, mesne: *See—*
Stoeckel, Albert L., 3,784,818.

Pickles, Joseph, to Ferro Manufacturing Company. Automobile locking latch. 3,784,241, Cl. 292-216.000.

Pieloth, Manfred: *See—*
Schwarz, Arnulf; Konig, Gerhard; and Pieloth, Manfred, 3,783,902.

Pierce, Joseph E., to Dart Industries Inc., mesne. Aseptic packaging method and machine. 3,783,581, Cl. 53-37.000.

Pierce, Norton T.: *See—*
Ehrenfried, Albert D.; and Pierce, Norton T., 3,783,689.

Pierre, Naquet: *See—*
Barclay, Roger, 3,783,540.

Piggott, Richard G., to Spraying Systems Co. Foam producing nozzle. 3,784,111, Cl. 239-427.300.

Piliero, James. Coil spring anchor assembly. 3,783,459, Cl. 5-259.00b.

Pilipovich, Donald, to Rochwell International Corporation. Process for producing energy in a gas generator system. 3,783,617, Cl. 60-218.000.

Pillsbury Company, The: *See—*
Rejsa, Jack J., 3,783,753.

Pirck, Dietrich; Fuchs, Gundolf; and Sachse, Gerhard, to Deutsche Texaco Aktiengesellschaft. Preparation of alkoxylated resins. 3,784,528, Cl. 260-78.50t.

Pistilli, Henry L. Vibration dampener support for lenticular devices. 3,784,068, Cl. 224-5.00v.

Plastic Tubing Inc.: *See—*
Maroschak, Ernest J., 3,784,346.

Platz, Edward A. Sub-surface root fertilizer and probe. 3,783,804, Cl. 111-7.400.

Plemmons, Jerry R.: *See—*
Kenyon, Lewis W.; and Plemmons, Jerry R., 3,784,806.

Plessey Handel und Investments A.G.: *See—*
Goodinge, Mark Wallinger; and Moss, Norman, 3,784,105.

Plummer, Walter A.: *See—*
Bannies, Hans E., 3,784,730.

Pneumatic Scale Corporation: *See—*
Trusselle, William H., 3,783,913.

Polaroid Corporation: *See—*
Allen, Joseph H.; and Wareham, Richard R., 3,783,760.
Baker, James G., 3,783,764.
Baker, James G., 3,784,277.
Lambert, Ronald R., 3,784,638.

Polcha, Raymond J., to United States of America, Navy. Controlled fragmentation warhead. 3,783,790, Cl. 102-67.000.

Pollack, Melvin, to Apeco Corporation. Floating baffle system for fuel tanks. 3,784,050, Cl. 220-85.000.

Polytop Corporation: *See—*
Hazard, Robert E., 3,784,060.

Pomper, Anthony W.: *See—*
Kosta, Geza F.; and Pomper, Anthony W., 3,784,406.

Pon, Raymond M. Shuttlecock. 3,784,202, Cl. 273-106.00a.

Ponder & Best, Inc.: *See—*
Watanabe, Rinzo; and Shimojima, Masatoshi, 3,784,285.

Popov, Vladimir Ivanovich: *See—*
Tolochko, Cheslav Stanislavovich; Popov, Vladimir Ivanovich; Tsitsiv, Miron Vasilievich; Varfolomeev, Alexandr Nikolaevich; and Gervolsky, Marlen Mikhailovich, 3,783,595.

Poppel, Boris Safronovich: *See—*
Mamin, Evgeny Borisovich; Makarov, Viktor Alexeevich; Korneeva, Calina Petrovna; Poppel, Boris Safronovich; and Ivanov, Vyacheslav Ivanovich, 3,784,825.

Portmann, August Thomas, to Bruderer AG. Apparatus for balancing masses at a punch press. 3,783,699, Cl. 74-40.000.

Portmann, August Thomas, to Bruderer AG. Apparatus for the stepwise feed of workpieces. 3,784,075, Cl. 226-143.000.

Posirca, Radu: *See—*
Coanda, Henry; Aldea, Gheorghe; Bodea, Ion; Truica, Vasile; Hanciulescu, Valentin; Posirca, Radu; Lazar, Cristian; and Gabor, Iacob, 3,784,325.

Post, David. Pattern grading machine. 3,783,517, Cl. 33-17.00a.

Post, Udo: *See—*
Jellinek, Karl; Post, Udo; Gieben, Wibmar Uber; and Oellig, Rudi, 3,784,601.

Potain, Chevilly, Larue (val de Marne): *See—*
Noly, Jean, 3,784,852.

Potter, Terry C.; and Rhoads, Roger R., to Owens-Illinois, Inc. Article transfer apparatus. 3,784,261, Cl. 302-2.00r.

Power Conversion, Inc.: *See—*
Rosansky, Martin G.; and Jagid, Bruce E., 3,783,666.

Pozorski, Roman L., to Wilson & Co., Inc. Polymerization of vinyl monomers using coacervate stabilizing agents containing gelatin. 3,784,491, Cl. 260-8.000.

PPG Industries, Inc.: *See—*
LeBras, Louis R.; and Zwack, Robert R., 3,784,460.
Lewchuk, Richard R.; and Shorr, Norman, 3,784,655.
Otto, Jack M., 3,784,456.

PR Societe de Revision, Traitement de l'Information et Recouvrement SA: *See—*
Florent, Brigliano; Ernest, Vogt; and Edmond, Marmound, 3,783,604.

Prager, Hans John: *See—*
Chang, Kern Ko Nan; Prager, Hans John; and Weisbrod, Sherman, 3,784,925.

Prajsnar, Tadeusz; Rulinski, Jozef; Zglobicki, Edward; and Sojka, Bronislaw, to Instytut Metalurgii Zelaza. Method of and device for the drawing of tubular workpieces. 3,783,663, Cl. 72-41.000.

Pratt, Roy E.: *See—*
Reynolds, David L.; Youngblood, Douglas J.; Bunn, Dorrance P., Jr.; and Pratt, Roy E., 3,784,463.

Pregler, John E., to Olin Corporation. Urethane coating based on a substituted isocyanurate-lactone addition product. 3,784,503, Cl. 260-33.6ub.

Presnick, Michael C. Lightweight collapsible structures. 3,784,043, Cl. 220-4.00f.

Preston, Charles F., to General Electric Company. Brush holder assembly. 3,784,856, Cl. 310-239.000.

Preus, Paul; and Gallagher, John J. Convertible barrier for substances floating on water. 3,783,621, Cl. 61-1.00f.

Previati, Augusto, to Industrie Pirelli S.p.A. Expansible sector core for curing belts. 3,784,338, Cl. 425-28.000.

Price, H. C., Co.: *See—*
Bickham, Francis L., 3,784,349.

Price, Raymond G.: *See—*
Geiersbach, Allois F.; and Price, Raymond G., 3,784,890.

Prieur, Robert: *See—*
Prival, Guy; and Prieur, Robert, 3,783,504.

Prillig, Elliott Benjamin; and Chun, Alexander Hing Chinn, to Abbott Laboratories. Tablet preparation. 3,784,683, Cl. 424-19.000.

Prioux, Jean O.: *See—*
Glasman, Leon; and Prioux, Jean O., 3,783,728.

Prival, Guy; and Prieur, Robert, to Societe Industrielle Bull-General Electric (Societe Anonyme). Process of fabricating multichannel magnetic head units. 3,783,504, Cl. 29-603.000.

Procter & Gamble Company, The: *See—*
Diehl, Francis L., 3,784,475.
Peterson, Donald J., 3,784,580.

Production, Inc.: *See—*
Schmidt, Gunter, 3,784,835.

Proops, William Robert: *See—*
Papa, Anthony Joseph; and Proops, William Robert, 3,784,594.

Pruitt, Dana L. Variable speed hoist. 3,784,165, Cl. 254-168.000.

Pullman Incorporated: *See—*
Shaver, William R., 3,783,797.

Purification Sciences, Inc.: *See—*
Lowther, Frank E., 3,784,838.

Puskas, Imre: *See—*
Fields, Ellis K.; and Puskas, Imre, 3,784,573.

Pyle, Kenneth E., to Reef-Baker Corporation. Condensate valve. 3,783,889, Cl. 137-204.000.

Quanta Welding Company: *See—*
Schaitberger, Daniel A., 3,784,779.

Quellette, Alfred R.: *See—*
Benson, Alden P.; Foster, Kenneth J.; and Quellette, Alfred R., 3,783,452.

Race, Hugh A.: *See—*
Alford, Raymond N.; and Race, Hugh A., 3,783,747.

Rachlin, Joel R.; and Neudek, Rudolph Otto. Ventilating air distributing channel fastening and supporting bracket. 3,784,141, Cl. 248-214.000.

Radway, Jerrold E.: *See—*
Strong, Herbert W.; Radway, Jerrold E.; and Cook, Henry A., 3,784,680.

Ragard, Phillip A.; and Paton, Jim, to Universal Instruments Corporation. Film mounted electronic component insertion machine. 3,783,488, Cl. 29-203.00b.

Rain Jet Corporation: *See—*
Frempter, Wayne W., 3,784,101.

Rainer, Norman B.; and Full, Donald A., to Morris, Philip, Incorporated. Microporous vinyl chloride polymers and method of making the same. 3,784,490, Cl. 260-2.50m.

Rainsard, Yves: *See—*
Oswald, Jacques; and Rainsard, Yves, 3,784,915.

Rait, Joseph M.: *See—*
Riesenberg, James H.; and Rait, Joseph M., 3,783,576.

Ramanathan, Visvanathan: *See—*
Desai, Nalin Binduprasad; Jayaraman, Ponnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, 3,784,559.

Ramge, Ronald T. Alignment and installation tool for threaded male members. 3,783,717, Cl. 81-119.000.

Ramstrom, Sven, to Karlskronavarvet AB. Directional coupler for measuring forward and reflected power comprising a bored metal block. 3,784,911, Cl. 324-95.000.

Randak, Alfred; and Michel, Karl, to Stahlwerke Sudwestfalen AG. Process for the manufacture of cold-rolled sheets from a rust-resistant, ferriticsteel alloy containing chromium and molybdenum. 3,784,418, Cl. 148-12.000.

Rando, Robert, to Bell Telephone Laboratories, Incorporated. High voltage shutdown protection circuit with bias arrangement to decrease the voltage shutdown point with increasing. 3,784,893, Cl. 321-11.000.

Ranft, Ernst L.; and Thornburgh, William F., to General Motors Corporation. Exhaust gas recirculation valve. 3,783,848, Cl. 123-119.00a.

Rank Organisation Limited, The: *See—*
Baker, David Keith; Eason, Ronald Charles; Gascoigne, Richard Melville; and Schryver, Andrew, 3,784,875.

Ranucci, Joseph Anthony; and Sheth, Prabhakar Ranchhordas, to Hoffmann-La Roche Inc. Directly compressible monocalcium phosphate. 3,784,708, Cl. 424-357.000.

Raths, Fred W.: *See—*
Buckman, Stanley J.; Pera, John D.; Raths, Fred W.; and Mercer, Gerald D., 3,784,649.

Raudys, Vytas Andrew, to Union Carbide Corporation. Close fitting article packaging system. 3,783,580, Cl. 53-29.000.

Rauser, Jan Axel Ingemar, to Tetra Pak International AB. Device for the placing of packages into a collecting carton. 3,783,584, Cl. 53-160.000.

Raymond, David G.; Smith, Gary C., Jr.; and Viles, Alan H., to Abex Corporation. Axial piston hydraulic transducer shoe retainer structure. 3,783,743, Cl. 91-499.000.

RCA Corporation: *See—*
Chang, Kern Ko Nan; Prager, Hans John; and Weisbrod, Sherman, 3,784,925.
Christopher, Todd J., 3,784,857.
Dorsey, Denis Peter, 3,784,870.
Fassbender, Charles Joseph, 3,784,918.
Joy, Patrick Francis, Jr.; and Herzog, Donald George, 3,784,929.
McGrogan, Ellwood Patrick, Jr., 3,784,844.
Thomas, Lucius Ponder, 3,784,903.

RCA Limited: *See—*
Crane, Robert Anthony, 3,784,928.

Reactor Centrum Nederland: *See—*
Versteeg, Geert; and Engel, Albertus J. G., 3,784,677.

Read, George: *See—*
Holmes, Frank; Moore, William A.; and Read, George, 3,784,274.

Rear Melvin K.: *See—*
Penote, Vincent S.; and Rear Melvin K., 3,783,537.

Recognition Equipment Incorporated: *See—*
Borowski, Chester Joseph, Jr.; and DuVall, Dale Rodney, 3,784,981.

Red Hill Grinding Wheel Corporation: *See—*
Caserta, Richard T.; and Ellendman, Merrill, 3,784,365.

Redifon Limited: *See—*
Burnham, Donald; Honeyball, Samuel Walter; Spooner, Michael; and Lobb, Daniel Richard, 3,784,742.

Redlake Corporation: *See—*
Whitley, Ernest M.; Beaman, Don L.; and McCombie, William S., 3,783,763.

Redpath Dorman Long (Contracting) Limited: *See—*
Hansen, Frode Johan, 3,783,626.

Redy-Tow, Inc.: *See—*
Gjoerloff, H. Eric, 3,784,036.

Reedy, Carl D., Jr., to Texas Instruments, Incorporated. Chemical vapor deposition coatings on titanium. 3,784,402, Cl. 117-69.000.

Reef-Baker Corporation: *See—*
Pyle, Kenneth E., 3,783,889.

Reflex Corporation of Canada Limited: *See—*
Hedgewick, Peter, 3,784,279.

Rehfeld, Lothar. Method of producing electrical fuse elements. 3,783,506, Cl. 29-623.000.

Reich, Robert Frederick, to Chicago Bridge & Iron Company. Method and apparatus for transporting liquefied natural gas. 3,783,628, Cl. 62-55.000.

Reif, Philip George, to International Telephone and Telegraph Corporation. Electrooptical system. 3,784,831, Cl. 250-213.0vt.

Reifenschweiler, Otto, to U.S. Philips Corporation. Tritium target with compensated sputtering. 3,784,824, Cl. 250-501.000.

Reimus, Richard G.; and Saporito, Anthony. Ice wash apparatus. 3,783,632, Cl. 62-123.000.

Rejsa, Jack J., to Pillsbury Company, The. Apparatus for feeding flattened, tubular container blanks. 3,783,753, Cl. 93-58.100.

Reliance Electric Company: *See—*
Gilbert, Edward O.; and Gilbert, Elmer G., 3,783,974.

Renfroe, Walter D., to Terra Marine Scoop Company, Inc. Level wind drum. 3,784,166, Cl. 254-186.000.

Renner, Alfred; and Seiz, Wolfgang, to Ciba-Geigy Corporation. Methylolglycidyl ethers. 3,784,584, Cl. 260-830.0tw.

Republic Steel Corporation: *See—*
Whalen, Mark E.; and Malleck, Joseph W., 3,783,494.

Rescalli, Carlo: *See—*
Cinnasi, Alexxandro; and Rescalli, Carlo, 3,784,626.

Resch, Richard J.: *See—*
Hendrickson, Philip J.; and Resch, Richard J., 3,784,249.

Rex Chainbelt Inc.: *See—*
Eggert, Glenn J., 3,784,942.

Rexham Corporation: *See—*
Shea, John V.; and Cote, Raymond A., 3,784,088.

Reynolds, Charles Edward; and Gombar, Eugene Leonard, to AMP Incorporated. Connecting device for printed circuit board. 3,784,955, Cl. 339-17.00r.

Reynolds, David L.; Youngblood, Douglas J.; Bunn, Dorrance P., Jr.; and Pratt, Roy E., to Texaco Inc. Catalytic cracking of naphtha and gas oil. 3,784,463, Cl. 208-74.000.

Rezek, John R., to Motorola, Inc. Controllable audio amplifier for miniature receiver provided by a thick film module including an integrated circuit. 3,784,923, Cl. 330-22.000.

Rheem Manufacturing Company: *See—*
Dobbert, Arnold E., 3,783,583.

Rheinmetall G.m.b.H.: *See—*
Backstein, Gunter; and Petzsch, Lothar, 3,783,791.

Rhoads, Roger R.: *See—*
Potter, Terry C.; and Rhoads, Roger R., 3,784,261.

Rhodenizer, Harold L.: *See—*
Grunwald, John J.; D'Ottavio, Eugene D.; Rhodenizer, Harold L.; and Lombardo, Michael S., 3,784,440.

Rhone-Poulenc S.A.: *See—*
Sausse, Andre; and Stern, Andre, 3,783,454.
Sausse, Andre, 3,784,323.

Ribba, Alain. Water soluble polymer compositions and process for preparation therefor. 3,784,526, Cl. 260-78.50r.

Ribera, Antonio: *See—*
Adams, Stewart Sanders; Armitage, Bernard John; Nicholson, John Stuart; and Ribera, Antonio, 3,784,705.

Richardson, Donald. Braiding machine. 3,783,736, Cl. 87-29.000.

Richardson, John Lloyd; Segovia, Gilbert; Ju, Fred; and Bachle, Wilfred Hugo, to Philco-Ford Corporation. Composite coiled membrane assembly. 3,784,470, Cl. 210-321.000.

Richetts, James R., to Marquette Electronics, Inc. Suction electrode. 3,783,865, Cl. 128-206.00e.

Richter, Eike; and Brissey, George E., to General Electric Company. Method of making high speed homopolar generator with straight winding construction. 3,783,502, Cl. 29-598.000.

Richter, Gerhard: *See—*
Mund, Konrad; Richter, Gerhard; and Wenzel, Magdalena, 3,784,412.

Richtzenhain, Herman: *See—*
Vogt, Wilhem; and Richtzenhain, Herman, 3,784,612.

Rickert, Richard Michael, to Bell Telephone Laboratories, Incorporated. Telephone set illumination circuit. 3,784,760, Cl. 179-90.100.

Riedmayer, Henry J.: *See—*
Johnston, Samuel A.; Lyons, John G.; and Riedmayer, Henry J., 3,784,948.

Riesenberg, James H.; and Rait, Joseph M., to Pelorex Corporation. Method and apparatus for filling and sealing container. 3,783,576, Cl. 53-7.000.

Riester, Hubert A.: *See—*
Mannherz, Elmer D.; Riester, Hubert A.; Schmoock, Roy F.; and Yard, John S., 3,783,687.

Rife, William J.: *See—*
Dunn, R. S.; and Rife, William J., 3,783,564.

Robertshaw Controls Company: *See—*
Goodhouse, Carl J.; and Strachan, Robert, 3,783,769.
Kreps, Emmett E., 3,783,675.
Wolfe, Denis G.; and Tyler, Hugh J., 3,784,351.

Robertson, Loewy, Engineering Company, Limited: *See—*
Ross, Hugh MacDonald; and Ball, Allan, 3,784,153.

Robinson, Joseph D.: *See—*
Darley, Henry C. H.; and Robinson, Joseph D., 3,784,898.

Robinson, Keith, to Dowty Fuel Systems, Limited. Fuel systems for aircraft gas turbine engines. 3,784,130, Cl. 244-76.00j.

Robinson, Leroy E., to Phillips Petroleum Company. Blown film tube collapsing. 3,784,347, Cl. 425-387.000.

Robray Industries: *See—*
Slocum, Fred H., 3,784,236.

Rocher, George; and Vayda, Pierre Andre, to Metallurgical Exoproducts Corporation. Method and apparatus for ladle additions. 3,784,177, Cl. 266-34.00t.

Rochwell International Corporation: *See—*

Pilipovich, Donald, 3,783,617.
Rockland Industries Ltd.: *See—*
Pelletier, Guy, 3,783,924.
Rocklin, Albert L.; and Petty, Walter L., to Shell Oil Company. 2,3-Bis(difluoroamino)propyl 2,2-dinitro-propyl carbonate useful in propellants. 3,784,422, Cl. 149-88.000.
Rockwell International Corporation: *See—*
Fowler, John H.; and Johnson, Charles F., 3,783,899.
Frankel, Milton B.; and Lo, George A., 3,784,420.
Rodale Manufacturing Co., Inc.: *See—*
Lingaraju, Bhartoor, 3,784,953.
Rodriguez, Dario: *See—*
Martinez, Cristobal; and Rodriguez, Dario, 3,784,553.
Rody, Jean: *See—*
Kirchmayr, Rudolf; Heller, Hansjorg; and Rody, Jean, 3,784,569.
Rogge, Gail E. Retractable step for passenger vehicles. 3,784,227, Cl. 280-166.000.
Rohm & Haas Company: *See—*
Fellmann, Robert P.; and Whang, Jong Jai, 3,784,532.
Rohr, Wolfgang; and Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Acetoacetanilide substituted by a phenylcarbamazloxy group. 3,784,564, Cl. 260-472.000.
Roizman, Pavel Aronovich: *See—*
Nekrasov, Konstantin Dmitrievich; Tarasova, Alexandra Petrovna; Bljusin, Alfred Avgustovich; Avdeeva, Tamara Petrovna; Elin, Vyacheslav Alexandrovich; Roizman, Pavel Aronovich; and Denisenko, Alexandr Panteleevich, 3,784,385.
Rolle, Albert L., to United States of America, Navy. Sonar image converter. 3,784,805, Cl. 340-3.00r.
Rosansky, Martin G.; and Jagid, Bruce E., to Power Conversion, Inc. Apparatus for fabricating lithium anodes. 3,783,666, Cl. 72-199.000.
Rose, Nathaniel G. Blasting operations. 3,783,789, Cl. 102-28.00a.
Rosenberg, Otto: *See—*
Wagner, Karl; Rosenberg, Otto; and Hummel, Adam, 3,783,757.
Ross, Hugh MacDonald; and Ball, Allan, to Robertson, Loewy, Engineering Company, Limited. Rolling mill roll coolant control. 3,784,153, Cl. 281-25.000.
Ross, Warren N. Irrigation center pivot structure. 3,784,106, Cl. 239-177.000.
Ross-Holm Division Holm Tractor & Equipment Company: *See—*
Holm, William Z., 3,783,830.
Rossi, Eugene F., to Allis-Chalmers Corporation. Nozzle for rotary kiln. 3,784,107, Cl. 239-208.000.
Rossi, Gerald F. Bicycle securing apparatus. 3,783,659, Cl. 70-234.000.
Rossmann, Axel; and Hoffmuller, Wilhelm, to Motoren- und Turbine-Union. Method and means for retaining ceramic turbine blades. 3,784,320, Cl. 416-215.000.
Rotax Limited: *See—*
Silvertown, Cyril, 3,784,894.
Rotron Incorporated: *See—*
Knauth, Berthold A., 3,783,688.
Roussin, Yvonne Henriette. Building construction for forming a ceiling floor. 3,783,569, Cl. 52-480.000.
Rowan Controller, Inc.: *See—*
Krick, John B.; and Coleman, Bernard, 3,784,846.
Royal Industries, Inc.: *See—*
Schmidt, Raymond H., 3,783,521.
Ruck, John D.: *See—*
Gerard, William L.; and Ruck, John D., 3,783,996.
Ruckert, Friedrich: *See—*
Schneider, Wolfgang; Strohbeck, Gotthilf; Harlin, Walter; Ruckert, Friedrich; and Stahle, Eugen, 3,784,168.
Rudolph, Joseph, to Patent-Freuhand-Gesellschaft fur elektrische Gluhlampen mbH. Gas laser. 3,784,927, Cl. 331-94.500.
Ruger, Sturm & Co., Inc.: *See—*
Sefried, Harry H., II, 3,783,545.
Ruhro, Richard H., to Computer Identics Corporation. Label reader. 3,784,795, Cl. 235-61.11e.
Rulinski, Jozef: *See—*
Prajsnar, Tadeusz; Rulinski, Jozef; Zglobicki, Edward; and Sojka, Bronislaw, 3,783,663.
Russell, George A.: *See—*
Norman, Leslie W.; Hunter, Skillman C.; and Russell, George A., 3,783,616.
Rutgersweke Aktiengesellschaft: *See—*
Jellinek, Karl; Post, Udo; Gieben, Wibmar Uber; and Oellig, Rudi, 3,784,601.
Rutgerswerke Aktiengesellschaft: *See—*
Franck, Heinz-Gerhard; Metzendorf, Walter; Schweym, Erich; Beneke, Herbert; Marrett, Rolf; Nijssen, Jozef; and Omran, Jaafar, 3,784,487.
Ruthenberg, Meyer L., to Koppers Company, Inc. Interlocking joint for sealing rings. 3,784,215, Cl. 277-220.000.
Rutherford, John M., Jr.: *See—*
Kliment, Karel; and Rutherford, John M., Jr., 3,784,540.
Rutledge, Thomas F., to ICI America Inc. Oxidation of phenols. 3,784,575, Cl. 260-396.00r.
Ruytenbeek, Silvester Marie: *See—*
Geominy, Louis Joseph Henri; Gommans, Hubertus Johannes Josephus; Mans, Leonardus Frans Helene; and Ruytenbeek, Silvester Marie, 3,784,784.
Ryan, Paul T., to General Electric Company. Test apparatus for pneumatic brake system. 3,784,813, Cl. 246-169.00r.
Ryba, Dusan: *See—*
Van der Burgt, Gerrit Johan; and Ryba, Dusan, 3,784,219.
Saari, Walfred S.; and Miller, Charles S.; deceased (by Miller, Ruth A.; executrix), to Merck & Co., Inc. Amino benzyl alcohol derivatives for treating hypertension and inhibiting gastric secretion. 3,784,700, Cl. 424-311.000.
Sabatelli, Leo C.; and Jesse, William L. Spray gun light assembly. 3,784,804, Cl. 240-2.0fd.
Sabee, Reinhardt N. Diaper with thickened fastening areas. 3,783,871, Cl. 128-287.000.
Sachse, Gerhard: *See—*
Pirck, Dietrich; Fuchs, Gundolf; and Sachse, Gerhard, 3,784,528.
Sack, Werner, to Jenaer Glaswerk Schott & Gen. Glass compositions of low inherent radioactivity. 3,784,387, Cl. 106-54.000.
Sadowy, Roman, Jr.: *See—*
Woolf, Julius Isadore; Sadowy, Roman, Jr.; and Gershman, Russell John, 3,784,757.
Saito, Shigeru: *See—*
Yoshino, Takachika; Saito, Shigeru; Sobukawa, Masukuni; Nagase, Isao; Niikura, Masao; Ishikura, Jun; and Sasaki, Yutaka, 3,784,560.
Saito, Susumu, to Tokyo Ferrite Manufacturing Company, Ltd. Tool devices of the variable torque type. 3,783,716, Cl. 81-52.40r.
Sajus, Lucien: *See—*
Lassau, Christian; Stern, Robert; and Sajus, Lucien, 3,784,481.
Sakai, Tadashi; Sakimura, Masahiko; and Ino, Yoichi, to Nippon Electric Varian, Ltd. Quadrupole mass spectrometer having resolution variation capability. 3,784,814, Cl. 250-41.9ds.
Sakane, Kuniyoshi: *See—*
Nakade, Sadao; Kubota, Hirosuke; Oshita, Toshiyuki; and Sakane, Kuniyoshi, 3,783,624.
Sakazaki, Tadazumi: *See—*
Uno, Naoyuki; Nomura, Katsuhiko; Sakazaki, Tadazumi; Watanabe, Koichiro; Miyata, Katsuhiko; and Urano, Fumio, 3,783,765.
Sakimura, Masahiko: *See—*
Sakai, Tadashi; Sakimura, Masahiko; and Ino, Yoichi, 3,784,814.
Salling, Jack Ronald: *See—*
Eddens, Fletcher C.; Corley, William P.; Salling, Jack Ronald; and McDonald, Ralph E., 3,784,137.
Saloutos, Louis. Paint brush with bristle cartridge. 3,783,468, Cl. 15-202.000.
Samour, Carlos M.; and Vida, Julius A., to Kendall Company, The, mesne. Selected 5-substituted-5-phenylalkyl barbituric acids. 3,784,547, Cl. 260-257.000.
Sampson Corporation, The: *See—*
Burstein, Albert H.; and Allen, William C., 3,783,860.
Sanders, Beatrix Y.: *See—*
Bagheri, Mansour A. H.; Fitzgerald, Walter P., Jr.; and Sanders, Beatrix Y., 3,784,435.
Sandoz, Inc.: *See—*
Buzzolini, Mario G., 3,784,604.
Sandoz-Wander, Inc.: *See—*
Habeck, Dietmar A.; and Houlihan, William J., 3,784,693.
Sankyo Company, Limited: *See—*
Takahashi, Shogo; Yamada, Takayasu; and Okudaira, Hiromi, 3,784,366.
Sansaku Ocean Co., Ltd.: *See—*
Nishida, Hiroshi; Yamamoto, Masao; Kitai, Atsuo; Ozaki, Asaichiro; Nishimura, Yokio; Takemi, Hiroto; and Takemi, Chimo, 3,784,446.
Sansome, Dennis Hugh: *See—*
Dawson, Robert Graham; and Sansome, Dennis Hugh, 3,783,668.
Santa Maria, Richard C.: *See—*
Macaulay, William R.; Feldhake, Ralph H.; Higgins, Dale G.; and Santa Maria, Richard C., 3,784,414.
Santiago, Edgardo: *See—*
Bayer, John W.; and Santiago, Edgardo, 3,784,529.
Sanyo Chemical Industries, Ltd.: *See—*
Hijimoto, Takehiki; Okada, Masashi; and Inque, Higashiyama, 3,784,597.
Saporito, Anthony: *See—*
Reimus, Richard G.; and Saporito, Anthony, 3,783,632.
Saretzky, Horst: *See—*
Kurten, Fritz; and Saretzky, Horst, 3,783,973.
Saroch, Vladimir: *See—*
Kubec, Jiri; and Saroch, Vladimir, 3,784,361.
Sartori, Daniel. Drawing apparatus. 3,783,519, Cl. 33-77.000.
Sasaki, Rentaro; Watanabe, Akinori; Ogasawara, Tatsuo; Watanabe, Satosh; and Sogabe, Hidetoshi, to Oki Electric Industry Company Ltd. and Okaya Electric Industry Company. Cold cathode discharge display apparatus manifesting memory action. 3,784,864, Cl. 31-217.000.
Sasaki, Yutaka: *See—*
Yoshino, Takachika; Saito, Shigeru; Sobukawa, Masukuni; Nagase, Isao; Niikura, Masao; Ishikura, Jun; and Sasaki, Yutaka, 3,784,560.
Sata, Toshikatsu: *See—*
Mizutani, Yukio; Sata, Toshikatsu; Izuo, Ryuji; and Yamane, Reiichi, 3,784,457.
Sato, Hideo: *See—*
Yamamoto, Katsuo; Sato, Hideo; Iwasa, Toshio; Nakamura, Hisao; and Adachi, Katsuhiro, 3,783,649.
Sato, Masamichi: *See—*

Fukushima, Osamu; Sato, Masamichi; and Honjo, Satoru, 3,783,827.

Sato, Masamichi, to Xerox Corporation. Electrophotographic method. 3,784,301, Cl. 355-7.000.

Sato, Masamichi; and Fukushima, Osamu, to Xerox Corporation. Imaging system. 3,784,397, Cl. 117-37.01e.

Sato, Shigehiko: *See—*
Yamano, Togo; Jono, Kumiko; Sato, Shigehiko; and Nakanishi, Michio, 3,784,699.

Sato, Takakazu; and Masago, Takaya, to Nissan Motor Company, Limited. Carburetor for internal combustion engines. 3,784,172, Cl. 261-44.00r.

Sato, Yoshikazu: *See—*
Maeda, Tsutomu; and Sato, Yoshikazu, 3,784,939.

Sauer, Harold S.; Hagopian, Nubar D.; and Colman, John M., to Medical Innovations, Inc. Novel external circulatory assist device. 3,783,859, Cl. 128-24.00r.

Saueressig, Johann Heinrich. Intaglio print machine with novel roll mounting mandrel and bushing assembly. 3,783,780, Cl. 101-153.000.

Sausse, Andre; and Stern, Andre, to Rhone-Poulenc S.A. Surgically implantable prosthetic duct for the removal of biological liquids. 3,783,454, Cl. 3-1.000.

Sausse, Andre, to Rhone-Poulenc S.A. Peristaltic pump. 3,784,323, Cl. 417-53.000.

Sawchuk, Loris G.: *See—*
Araujo, Roger J.; and Sawchuk, Loris G., 3,784,386.

Sayigh, Adnan A. R.; Stuber, Fred A.; and Ulrich, Henri, to Upjohn Company, The. Novel compounds and process. 3,784,527, Cl. 260-78.0st.

Schachet, Eli, to Sherwood Medical Industries, Inc. Suction drainage device. 3,783,870, Cl. 128-276.000.

Schadebrodt, Gerhard; Altzschner, Gustav; Feldmann, Hans-Helmut; Graichen, Bernhard; and Pabst, Wolfgang, to Licenta Patent-Verwaltung-G.m.b.H. Program controlled coordinate machine. 3,783,741, Cl. 90-13.00c.

Schafer, Kugelfischer Georg, & Co.: *See—*
Kunert, Karlheinz; and Kozalla, Herbert, 3,783,482.

Schaitberger, Daniel A., to Quanta Welding Company. Article including a weld joint in close proximity to a fragile or thermally sensitive element and method of making the same. 3,784,779, Cl. 219-117.000.

Schanen, Robert R.: *See—*
Kaiser, Francis T.; and Schanen, Robert R., 3,784,033.

Schantz, Spencer C.: *See—*
Schantz, Spencer C.; and Berry, William R. (said Berry assor. to said), 3,784,944.

Schantz, Spencer C.; and Berry, William R., said Berry assor. to said Schantz, Spencer C. Adjustable electric buzzer. 3,784,944, Cl. 335-276.000.

Scharenberg, Robert T.: *See—*
Avery, R. Stanton; Scharenberg, Robert T.; and Zeidman, Gordon G., 3,784,076.

Scharrer, Roland Pierre Franz, to Arizona Chemical Company. Conjugation of unsaturated fatty materials. 3,784,537, Cl. 260-97.500.

Schattenmann, Wolfram: *See—*
Wilckens, Volkmar; and Schattenmann, Wolfram, 3,784,969.

Schaul, Jerome Sandel; Wissbrun, Kurt Falke; and Hannon, Martin John, to Celanese Corporation. Process of blow molding containers from particle form polyethylene resins. 3,784,661, Cl. 264-98.000.

Schellhammer, Carl-Wolfgang, to Bayer Aktiengesellschaft. 4-Chloropyrazolyl compounds. 3,784,570, Cl. 260-308.00b.

Schenck, Carl, Firma: *See—*
Heiland, Manfred, 3,783,557.

Schenker, Karl: *See—*
Jenny, Erwin F.; and Schenker, Karl, 3,784,642.

Scherer, James P.; and Koerner, John A., to Textron, Inc. Broadband balun. 3,784,933, Cl. 333-26.000.

Schering Corporation: *See—*
Shapiro, Elliot L.; Teutsch, George J.; and Herzog, Hershel L., 3,784,603.

Schievelbein, Vernon H.; Shankle, Leonard A.; and Wade, Herbert N., to Texaco Inc. Secondary recovery process utilizing brine electrolyzed to remove hydrogen sulfide. 3,783,943, Cl. 166-266.000.

Schild, Josef; and Wessner, Harald, to Vockenhuber, Karl and Hauser, Raimund. Exposure control device for photographic cameras. 3,783,761, Cl. 95-11.00r.

Schilter, Josef: *See—*
Forgo, Gabor; Meyer, Erwin; and Schilter, Josef, 3,783,828.

Schindler, Walter; Schmid, Erich; and Zuest, Armin, to Ciba-Geigy Corporation. Imidazolidinone derivatives as central nervous system depressants. 3,784,689, Cl. 424-250.000.

Schirmer, Hermann; and Peilstocker, Gunter, to Bayer Aktiengesellschaft. Polycarbonate molding compositions having improved release properties containing an ester of a trihydric alcohol and a C-10 to C-22 saturated aliphatic carboxylic acid. 3,784,595, Cl.260-18.0tn.

Schlang, Arthur, to Isotec Incorporated. Electro-optical handwritten character reader. 3,784,982, Cl. 340-146.30j.

Schlinger, Warren G.: *See—*
Slater, William L.; Schlinger, Warren G.; and Crouch, William B., 3,784,364.

Schloemann Aktiengesellschaft: *See—*
Groos, Horst Hans; and Zander, Walter, 3,783,774.

Schlumberger Technology Corporation: *See—*
Hayes, Donald A., 3,784,828.
Kisling, James W., III, 3,783,941.
Schuster, Nick A., 3,784,822.
Schuster, Nick A., 3,784,900.
Urbanosky, Harold J., 3,783,940.
Whitfill, William A., Jr., 3,784,732.

Schmedding, Albert A.; and Pfiefer, Ernest L., to Bergenfield Development Co., Inc. Sewing machine. 3,783,811, Cl. 112-218.00r.

Schmid, Erich: *See—*
Schindler, Walter; Schmid, Erich; and Zuest, Armin, 3,784,689.

Schmidt, Franz: *See—*
Hilt, Albrecht; Schmidt, Franz; and Schwartz, Erich, 3,784,519.

Schmidt, Gunter, to Production, Inc. Film sheet cassette. 3,784,835, Cl. 250-480.000.

Schmidt, Raymond H., to Royal Industries, Inc. Vehicle torsion bar setting gauge. 3,783,521, Cl. 33-181.0at.

Schmitt, Edward Emil; Suen, Tzeng Jiueq; and Updegraff, Ivor Heberling, to American Cyanamid Company. Water-degradable resins containing recurring, contiguous, polymerized glycolide units and process for preparing same. 3,784,585, Cl. 260-861.000.

Schmolling, Gunther: *See—*
Ertl, Dietrich; Eishold, Horst-Gunter; Gilles, Helmut; Schmolling, Gunther; Steuernagel, Walter; and Nitz, Jurgen, 3,783,589.

Schmoock, Roy F.: *See—*
Mannherz, Elmer D.; Riester, Hubert A.; Schmoock, Roy F.; and Yard, John S., 3,783,687.

Schneider, Gunter: *See—*
Klein, Dagobert; and Schneider, Gunter, 3,784,936.

Schneider, Jos., & Co. Optische Werke: *See—*
Himmelsbach, Paul, 3,783,603.
Strobel, Joseph; and Beisiegel, Norbert, 3,784,290.

Schneider, Klaus; and Flaschar, Heinz, to Bosch, Robert, G.m.b.H. Electro hydraulic control unit. 3,783,901, Cl. 137-625.640.

Schneider, Wolfgang; Strohbeck, Gotthilf; Harlin, Walter; Ruckert, Friedrich; and Stahle, Eugen, to Bosch, Robert, G.m.b.H. Vibratory device. 3,784,168, Cl. 259-1.00r.

Schnell, Karl. Portioning device for doughy material. 3,784,332, Cl. 417-319.000.

Schnipper, Leonard B. Combined sanitary napkin and medicated bandage. 3,783,869, Cl. 128-261.000.

Schoen, Oscar W., Jr., to United States of America, Navy. Method for electrically insulating magnetostrictive material. 3,783,505, Cl. 29-609.000.

Schon, Werner. Scissors. 3,783,512, Cl. 30-254.000.

Schorr, Manfred; and Duwel, Dieter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Imidazolinyl-ethyldithiocarbamic acid esters. 3,784,633, Cl. 260-302.600.

Schrader, Gerhard; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. Thiol- or thionothiol-phosphoric or -phosphonic acid esters. 3,784,653, Cl. 260-929.000.

Schrading, Mark S.; and Arps, Marion T., to Kimberly-Clark Corporation. Surgical towel. 3,783,862, Cl. 128-132.00d.

Schrage, Donald J., to Aqua-Chem, Inc. Grate structure for incinerator. 3,783,802, Cl. 110-14.000.

Schraut, Karl. Garden grooming machine and rotor therefor. 3,783,592, Cl. 56-13.300.

Schreiber, Chaim Samuel. Kitchen cabinets. 3,784,271, Cl. 312-257.00r.

Schreiber, Chaim Samuel. Kitchen cabinets. 3,784,272, Cl. 312-245.000.

Schreyer, Gerd: *See—*
Kleemann, Axel; Schreyer, Gerd; Weiberg, Otto; and Weigert, Wolfgang, 3,784,568.

Schroeder, Henry Charles, to Bell Telephone Laboratories, Incorporated. Parallel data scrambler. 3,784,743, Cl. 178-22.000.

Schryver, Andrew: *See—*
Baker, David Keith; Eason, Ronald Charles; Gascoigne, Richard Melville; and Schryver, Andrew, 3,784,875.

Schubert, Harry: *See—*
Naumann, Siegfried; Lauchner, Manfred; Golbs, Christian; and Schubert, Harry, 3,783,646.

Schuchmann, Russell P.: *See—*
Van Horn, Lawrence E.; Elliot, William H.; and Schuchmann, Russell P., 3,784,881.

Schuler, Ernst: *See—*
Golde, Karl-Heinz; and Schuler, Ernst, 3,783,934.

Schultz, Donald J. Automatic driver. 3,783,956, Cl. 173-93.700.

Schultz, Richard Allen, to Sperry Rand Corporation. Power transmission. 3,784,336, Cl. 418-61.000.

Schultz, Roger Lee: *See—*
McGlothlin, Raymond E.; Werlein, Eugene R.; Taylor, Bruce F.; and Schultz, Roger Lee, 3,784,579.

Schuster, Nick A., to Schlumberger Technology Corporation. Radioactivity well logging methods and apparatus. 3,784,822, Cl. 250-266.000.

Schuster, Nick A., to Schlumberger Technology Corporation. Plural frequency borehole methods and apparatus for investigating earth formations. 3,784,900, Cl. 324-10.000.

Schuster, Wilhelm, to Vereinigte Papierwerke Schickedanz & Co. Process and apparatus for the production of plastic-sheathed tampons. 3,784,425, Cl. 156-83.000.

Schutt, Dale W.; and Beck, Gerhard O., to United States of America, Atomic Energy Commission. Picosecond beam monitor. 3,784,909, Cl. 324-71.0eb.

Schwartz, Erich: *See—*
Hilt, Albrecht; Schmidt, Franz; and Schwartz, Erich, 3,784,519.
Schwartz, Reinhard: *See—*
Eheim, Franz; and Schwartz, Reinhard, 3,784,330.
Schwarz, Arnulf; Konig, Gerhard; and Pieloth, Manfred, to VEB Kombinat Mess-und Regelungstechnik Dessau. Fluidic surface device and nozzle system for the formation of jets in the device. 3,783,902, Cl. 137-803.000.
Schwenk, George B. Fireplace accessory for burning newspapers. 3,783,857, Cl. 126-164.000.
Schwenk, Kurt: *See—*
Adler, Jurgen; Erck, Karl; Klebba, Horst; Kramer, Wolfgang; Maneck, Ernst; Mueller-Eckhardt, Hans; and Schwenk, Kurt, 3,783,568.
Schweym, Erich: *See—*
Franck, Heinz-Gerhard; Metzendorf, Walter; Schweym, Erich; Beneke, Herbert; Marrett, Rolf; Nijssen, Jozef; and Omran, Jaafar, 3,784,487.
Schwierz, Gunter; and Wulff, Peter, to Siemens Aktiengesellschaft. Image magnifier. 3,784,830, Cl. 250-213.0vt.
SCM Corporation: *See—*
Babin, Frank A.; and Klein, Kenneth E., 3,784,304.
Oszlanyi, Antal G.; and Zielinski, Richard J., 3,784,709.
Scope Incorporated: *See—*
Daly, John Patrick, 3,784,765.
Scott, Kenneth, to Thorn Electrical Industries Limited. Vapour discharge lamps. 3,784,863, Cl. 313-174.000.
Scott Paper Company: *See—*
Spruyt, Harry; and Hoffman, Louis S., 3,784,056.
Scott, Robert E. Machine guard. 3,783,709, Cl. 74-612.000.
Scull, Herbert M., Jr., to Ethyl Corporation. Production of aluminum. 3,784,372, Cl. 75-68.00c.
Searle, G. D., & Co.: *See—*
Jaszczak, Ronald J., 3,784,821.
Searle, G. D., & Co., mesne: *See—*
Abramson, Harvey J., 3,783,861.
Sebring, John G.; and Downs, Thomas C., to General Motors Corporation. Oil seal arrangement for rotary engine. 3,784,337, Cl. 418-142.000.
Secure money changing and money receiving system: *See—*
Carlberg, Edwin W., 3,783,884.
Seeburg Corporation, The: *See—*
Jensen, Herman George, 3,783,989.
Sefried, Harry H., II, to Ruger, Sturm & Co., Inc. Loading lever arrangement for muzzle loading revolver. 3,783,545, Cl. 42-61.000.
Segal, Bernard Mortimer: *See—*
Friedman, David; and Segal, Bernard Mortimer, 3,784,979.
Segovia, Gilbert: *See—*
Richardson, John Lloyd; Segovia, Gilbert; Ju, Fred; and Bachle, Wilfred Hugo, 3,784,470.
Seiberlich, Walter, to Maschinenfabrik Lorenz Aktiengesellschaft. Gear shaping apparatus with improved cutter retraction arrangement. 3,783,740, Cl. 90-7.000.
Seifert, Edwin A., Jr. Torque hinge for draft member. 3,784,229, Cl. 280-446.000.
Seitetsu Kagaku Co., Ltd.: *See—*
Hirao, Shoichi; Ihara, Satoshi; and Ulda, Kanji, 3,784,175.
Seiz, Rudolf: *See—*
Gantre, Franz; Zywietz, Walter; Seiz, Rudolf; and Eickhoff, Heinz, 3,783,625.
Seiz, Wolfgang: *See—*
Renner, Alfred; and Seiz, Wolfgang, 3,784,584.
Sekiguchi, Hideto; Matsumura, Yasuo; Arai, Kojiro; Haruyama, Kunio; and Wakitani, Mitsuru, to American Cyanamid Company. Process for producing acrylic fibers. 3,784,666, Cl. 264-234.000.
Selivanov, Gennady Dmitrievich: *See—*
Morgolenko, Anatoly Sergeevich; Kononenko, Vadim Grigorievich; Fedosenko, Igor Grigorievich; Selivanov, Gennady Dmitrievich; Kushnarenko, Sergei Grigorievich; and Lepetjukha, Vladimir Semenovich, 3,783,672.
Semenov, Roman Lvovich: *See—*
Manyafov, Valery Nikolaevich; Busheev, Anatoly Ivanovich; Semenov, Roman Lvovich; and Klevtsov, Valery Alexeevich, 3,784,866.
Serafin, Marian; and Decubber, Maurice, to Societe Anonyme de Traverses en Beton Arme Systeme Vagneux. Rail fastening. 3,784,098, Cl. 238-349.000.
Seregni, Renato. Automatic tuner drive device applicable to radio receivers with an incorporated magnetic tape or wire recorder and/or player. 3,784,762, Cl. 179-100.110.
Seversen, Gordon F.: *See—*
Hanert, John A.; and Seversen, Gordon F., 3,783,987.
Seward, Gordon B.: *See—*
Nutter, Donald J., 3,784,192.
Seyfried, Franz: *See—*
Andres, Rudolf; Moller, Hermann; and Seyfried, Franz, 3,784,810.
Shaffer, Walter M., to Towmotor Corporation. Mechanical linkage for auxiliary drive control in vehicles. 3,783,962, Cl. 180-44.00f.
Shalako Resource Systems, Inc.: *See—*
Stearns, William P., 3,784,745.
Stearns, William P.; and Lauchner, John K., 3,784,750.
Shankle, Leonard A.: *See—*
Schievelbein, Vernon H.; Shankle, Leonard A.; and Wade, Herbert N., 3,783,943.
Shanks, Bruce E., to General Electric Company. Filament support. 3,784,865, Cl. 313-274.000.
Shapero, Wallace H., to Mattel, Inc. Appliable doll decorations. 3,783,554, Cl. 46-116.000.
Shapiro, Elliot L.; Teutsch, George J.; and Herzog, Hershel L., to Schering Corporation. 6-Azide-21-oxygenated-steroids of the pregnane series, methods for their manufacture and intermediates produces thereby. 3,784,603, Cl. 260-349.000.
Sharpe, Stuart Peter; and Snell, Brian Kenneth, to Imperial Chemical Industries Limited. O(2-Diethylamino-4-methyl-6-pyrimidinyl)O,O-dimethyl phosphorothioate and its salts. 3,784,546, Cl. 260-256.50r.
Shavel, John, Jr.: *See—*
Strandtmann, Max Von; Connor, David T.; and Shavel, John, Jr., 3,784,600.
Shaver, William R., to Pullman Incorporated. Hooper door actuating mechanism and auxiliary lock. 3,783,797, Cl. 105-251.000.
Shaw, Eva: *See—*
Shaw, James Anthony Carpenter; and Shaw, Eva, 3,784,051.
Shaw, James Anthony Carpenter; and Shaw, Eva. Container. 3,784,051, Cl. 220-93.000.
Shaw, Robert F.: *See—*
Eckert, John Presper, Jr.; Weiner, James R.; Shaw, Robert F.; and Weiss, Herbert Frazer, 3,784,983.
Shea, John V.; and Cote, Raymond A., to Rexham Corporation. Convertible hosiery package. 3,784,088, Cl. 229-68.000.
Sheard, John Leo, to Du Pont de Nemours, E. I., and Company. Process for making capacitors and capacitors made thereby. 3,784,887, Cl. 317-258.000.
Sheely, Harold R., to Badger Company, Inc., The. Reactor staging. 3,783,528, Cl. 34-57.00a.
Sheffer, Edward J.: *See—*
Bushnell, Clifford B.; Sheffer, Edward J.; and Sutliff, Robert C., 3,784,001.
Shell Oil Company: *See—*
Barker, Michael D., 3,784,554.
Darley, Henry C. H.; and Robinson, Joseph D., 3,784,898.
Rocklin, Albert L.; and Petty, Walter L., 3,784,422.
Shenk, John W.: *See—*
Ollinger, James C.; and Shenk, John W., 3,784,144.
Shepherd, Robert G. Elastic type arrow projecting gun. 3,783,852, Cl. 124-22.000.
Sherwood Medical Industries Inc.: *See—*
Brown, Alexander M., 3,783,997.
Brush, Donald C.; and Oswald, Robert D., 3,783,998.
Gerard, William L.; and Ruck, John D., 3,783,996.
Schachet, Eli, 3,783,870.
Weichselbaum, Theodore E., 3,783,895.
Sherwood, Noble; and Lombard, Ralph, to Textron, Inc. Rewind starter. 3,783,851, Cl. 123-185.0ba.
Sheth, Prabhakar Ranchhordas: *See—*
Ranucci, Joseph Anthony; and Sheth, Prabhakar Ranchhordas, 3,784,708.
Shevlin, Thomas S., to Minnesota Mining and Manufacturing Company. Device for storing and cooking food. 3,784,787, Cl. 219-386.000.
Shigemori, Hideto: *See—*
Hatanaka, Yoshihiro; Shigemori, Hideto; and Ueba, Akio, 3,784,790.
Shigeyama, Shogo; Yamada, Yoichiro; and Kondo, Kunihiro, to Trio Kabushiki Kaisha; a/t/a Trio Electronics, Inc. Noise eliminating device. 3,784,749, Cl. 179-1.00p.
Shiio, Hajime; and Yamaguchi, Masami, to Ceramic Kagaku Yugen Kaisha. Baked resistance member and the process of manufacture thereof. 3,784,407, Cl. 117-227.000.
Shimizu, Hiroshi, to Toyo Kogyo Co., Ltd. Rotary piston engine with exhaust recirculating device. 3,783,839, Cl. 123-8.450.
Shimojima, Masatoshi: *See—*
Watanabe, Rinzo; and Shimojima, Masatoshi, 3,784,285.
Shinkai, Kinya; Ahe, Yoshitaka; and Izumisawa, Masato, to Sony Corporation. Degaussing circuit for portable television color picture tube. 3,784,868, Cl. 315-8.000.
Shinko Electric Co., Ltd.: *See—*
Imai, Masataro; Ishizawa, Hiroshi; and Kanbayashi, 3,784,802.
Shiosaka, Makoto: *See—*
Hijiya, Hiromi; and Shiosaka, Makoto, 3,784,390.
Shippee, Dennis M.: *See—*
Burke, George E., Jr.; Lemos, Walter G.; and Shippee, Dennis M., 3,784,077.
Shoji, Akira, to Nippon Automation Kiki Co., Ltd. Self-closing valve device in a piping system of fluids. 3,783,887, Cl. 137-38.000.
Shorr, Norman: *See—*
Lewchuk, Richard R.; and Shorr, Norman, 3,784,655.
Shumate, Marvin T.; and Williams, Bobby G. Fishing reel. 3,784,124, Cl. 242-84.10r.
Siciliano, Anthony J., to Diamond International Corporation. Manure sheds and joist cleaner arrangement. 3,783,829, Cl. 119-17.000.
Siciliano, Anthony J., to Diamond International Corporation. End to end egg transfer mechanism. 3,783,990, Cl. 198-20.00r.
Sieber, Johannes-Helmut: *See—*
Weber, Hans-Peter; Litzler, Alfred; Hertig, Jean; Milicevic, Branimir; Fuhring, Heinrich; Sieber, Johannes-Helmut; and 042818, 3,783,650.
Siedel, Helene Elise, nee Graf: *See—*
Nahm, Helmut; and Siedel, Walter, 3,784,697.
Siedel, Walter: *See—*

Nahm, Helmut; and Siedel, Walter, 3,784,697.
Siegal, Burton L.: *See—*
Varon, Albert S.; and Siegal, Burton L., 3,784,023.
Siegart, William R.; Blackley, William D.; and Chafetz, Harry, to Texaco Inc. Anti-static fuel composition. 3,784,362, Cl. 44-62.000.
Siemens Aktiengesellschaft: *See—*
Berger, Helmut, 3,784,834.
Dilpers, Heinrich; and Musebeck, Horst, 3,783,503.
Holmstrom, Lars Olof, 3,784,837.
Martens, Hans; Diepers, Heinrich; and Muller, Alfred, 3,784,452.
Michael, Ulrich, 3,784,889.
Michel, Eberhard, 3,783,838.
Mund, Konrad; Richter, Gerhard; and Wenzel, Magdalena, 3,784,412.
Olsen, Willi, 3,784,771.
Oltersdorf, Winfried, 3,784,767.
Parlevliet, Theodor, 3,784,266.
Schwierz, Gunter; and Wulff, Peter, 3,784,830.
Weidemann, Erwin, 3,784,885.
Siemund, Herbert A. Combination window washer, scraper and squeegee. 3,783,469, Cl. 15-209.00r.
Sievert, William C.; CArter, William A.; and Munson, James L., to Inland Steel Company. Film thickness control apparatus. 3,783,823, Cl. 118-63.000.
Siler, Joseph T. Method of assembling members having misaligned holes. 3,783,496, Cl. 29-464.000.
Silvertown, Cyril, to Rotax Limited. Alternators. 3,784,894, Cl. 313-47.000.
Simjian, Luther G. Friction type exercising device with separate handgrip exerciser. 3,784,193, Cl. 272-68.000.
Simmons, Carl E.; and Fernandes, Joseph F., to United Aircraft Products, Inc. Surface cooler. 3,783,935, Cl. 165-44.000.
Simonovitch, Chaim: *See—*
Just, George E.; and Simonovitch, Chaim, 3,784,636.
Just, George F.; and Simonovitch, Chaim, 3,784,634.
Simpkin, William E. Emergency warning system with range control. 3,784,970, Cl. 340-33.000.
Simpson, Arthur R.; and Egloff, Frank S., to Chicago Bridge & Iron Company. Rotating drum with elastomeric pad-mounted supporting rings. 3,783,918, Cl. 144-208.00b.
Simpson, Dale O.: *See—*
Carlberg, Edwin W., 3,783,884.
Sinclair-Koppers Company: *See—*
Ceska, Gary W., 3,784,498.
Singer Company, The: *See—*
Fersch, Harry; and Kopido, Walter Heinz, 3,783,812.
Friedman, David; and Segal, Bernard Mortimer, 3,784,979.
Singer Company, The, mesne: *See—*
Kroll, Gunter, 3,783,813.
Oliphant, Melvain, 3,784,720.
Siosca, Felix Jerome: *See—*
Castro, Rodolfo; Toscano, Esteban J.; and Siosca, Felix Jerome, 3,784,183.
Sironi, Francesco. Facing panel. 3,783,572, Cl. 52-599.000.
Sistig, Wolf: *See—*
Pfannmueller, Helmut; Urban, Friedrich; Buechner, Oskar; Gropper, Hans; and Sistig, Wolf, 3,784,538.
Skattman, Rune Carl Valfrid; and Bjork, Olov Richard. Mobile, rock drill supporting rig. 3,784,159, Cl. 254-45.000.
Skinner, Harvey G., to Westmoreland Plastics Company. Pipe spacers. 3,783,907, Cl. 138-106.000.
Skorcz, Joseph A.: *See—*
Suh, John T.; and Skorcz, Joseph A., 3,784,643.
Skrmetta, Raphael O. Dynamic shrimp grader and grading method. 3,784,007, Cl. 209-85.000.
Slater, William L.; Schlinger, Warren G.; and Crouch, William B., to Texaco Inc. Production of fuel gas. 3,784,364, Cl. 48-215.000.
Slinko, Mikhail Gavrilovitch, 1/2 to UCB Societe Anonyme. Process for carrying out chemical reactions in a fluidized bed. 3,784,561, Cl. 260-465.300.
Sloboda, Adolph Edward: *See—*
Cohen, Elliott; Sloboda, Adolph Edward; Osterberg, Arnold Curtis; and Child, Ralph Grassing, 3,784,704.
Tomcufcik, Andrew Stephen; Child, Ralph Grassing; and Sloboda, Adolph Edward, 3,784,701.
Slocum, Fred H., to Robray Industries. Fitting for flexible conduits. 3,784,236, Cl. 285-45.000.
Sluss, Willard L. Chinese ring puzzle. 3,784,206, Cl. 273-158.000.
Smidth, F. L., & Co.: *See—*
Hastrup, Niels Erik, 3,784,389.
Smiley, Seymour H.: *See—*
James, Dean B.; Smiley, Seymour H.; and Whittaker, Ralph E., Jr., 3,784,817.
Smit, Jacobus C.: *See—*
Bruggeman, Frans; and Smit, Jacobus C., 3,784,044.
Smith, Elmer R.: *See—*
Johnson, Norman F.; and Smith, Elmer R., 3,784,766.
Smith, F. P., Corporation: *See—*
Ward, Elmer E., 3,784,011.
Smith, Gary C., Jr.: *See—*
Raymond, David G.; Smith, Gary C., Jr.; and Viles, Alan H., 3,783,743.
Smith, Harry A.; and Kobel, Erwin H., to Dow Chemical Company, The. Rubber and amine modified phenolic resins. 3,784,496, Cl. 260-29.300.
Smith International, Inc.: *See—*
Chance, Glenn G.; Crews, Sam T.; and Wilson, Clenis E., 3,784,238.
Smith, Ivan O. Tire caliper. 3,783,523, Cl. 33-203.130.
Smith, James D. B., to Westinghouse Electric Corporation. Latent organic phosphonium salt catalysts for curing glycidyl ether epoxy resins. 3,784,583, Cl. 260-830.0tw.
Smith, James M.; and Drennan, George A., to Hewlett-Packard Company. Microcircuit package assembly. 3,784,726, Cl. 174-52.00s.
Smith, John. Emergency rotating warning lamp. 3,784,809, Cl. 240-49.000.
Smith, Leonard Richard, to Smith, S. K., Company, The. Display box with an attachable lid movable relative to the box. 3,783,999, Cl. 206-45.230.
Smith, Maurice Irvin: *See—*
McIntosh, Alexander Charles; and Smith, Maurice Irvin, 3,784,758.
Smith, S. K., Company, The: *See—*
Smith, Leonard Richard, 3,783,999.
Smithkline Corporation: *See—*
McGusty, Elizabeth R.; and Sutton, Blaine M., 3,784,687.
Smock, Edmund G. Air-bag elevated dump vehicle. 3,784,255, Cl. 298-8.00t.
Smyth Manufacturing Company, mesne: *See—*
McGahon, John O.; and Byrne, William J., 3,783,991.
Snam Progetti, S.p.A.: *See—*
Cinnasi, Alexxandro; and Rescalli, Carlo, 3,784,626.
Snell, Brian Kenneth: *See—*
Sharpe, Stuart Peter; and Snell, Brian Kenneth, 3,784,546.
Snitzer, Elias: *See—*
Koester, Charles J.; and Snitzer, Elias, 3,783,874.
Snyder, George W.: *See—*
Erspamer, James R.; and Snyder, George W., 3,784,753.
Sobel, Leonard H., to Collision Devices, Inc. Deformable shock absorbing guard. 3,784,182, Cl. 267-140.000.
Sobukawa, Masukuni: *See—*
Yoshino, Takachika; Saito, Shigeru; Sobukawa, Masukuni; Nagase, Isao; Niikura, Masao; Ishikura, Jun; and Sasaki, Yutaka, 3,784,560.
Societe Anonyme de Traverses en Beton Arme Systeme Vagneux: *See—*
Serafin, Marian; and Decubber, Maurice, 3,784,098.
Societe Anonyme des Usines Chaussen: *See—*
Chartet, Andre, 3,783,938.
Societe Anonyme dite: L'Oreal: *See—*
Kalopissis, Gregoire; Bouillon, Claude; Manoussos, Georges; and Berrebi, Claudine, 3,784,685.
Societe Anonyme Laboservice: *See—*
Barclay, Roger, 3,783,540.
Societe d'Etudes Machines Thermiques: *See—*
Kuhn, Karl Walter; and Corbin, Marcel Pierre Ernest Marie, 3,783,842.
Societe dite: Electronique Marcel Dassault: *See—*
Geesen, Michel, 3,784,980.
Societe Francaise d'Equipements pour la Navigation Aerienne Aerodrome de Villacoublay: *See—*
Willoteaux, Guy Claude, 3,784,800.
Societe Industrielle Bull-General Electric (Societe Anonyme): *See—*
Prival, Guy; and Prieur, Robert, 3,783,504.
Societe Lannionnase d'Electroniques: *See—*
Aillet, Claude, 3,784,914.
Sogabe, Hidetoshi: *See—*
Sasaki, Rentaro; Watanabe, Akinori; Ogasawara, Tatsuo; Watanabe, Satosh; and Sogabe, Hidetoshi, 3,784,864.
Soiltest, Inc.: *See—*
Blackwell, Lyman L., 3,784,905.
Sojka, Bronislaw: *See—*
Prajsnar, Tadeusz; Rulinski, Jozef; Zglobicki, Edward; and Sojka, Bronislaw, 3,783,663.
Solitron Devices Inc.: *See—*
Perkins, Carroll R.; and Lucks, Irwin A., 3,784,725.
Sonn, George Frank; and McGonigle, Frank Michael, to Inmont Corporation. Pigmented plastics. 3,784,393, Cl. 106-288.00g.
Sonobe, Toshimitsu: *See—*
Ogasawara, Shoji; Tamate, Teruzo; and Sonobe, Toshimitsu, 3,783,698.
Sony Corporation: *See—*
Araki, Yoshitoshi; Yanagisawa, Yuzuru; and Nakayama, Akira, 3,784,862.
Morio, Minoru; and Awata, Yoriyoshi, 3,784,859.
Ohsawa, Mitsuo, 3,784,934.
Shinkai, Kinya; Ahe, Yoshitaka; and Izumisawa, Masato, 3,784,868.
Watanabe, Toshiro; and Kubota, Yasuharu, 3,784,734.
Sopinski, Zygmunt J.: *See—*
Trimble, Lester B.; and Sopinski, Zygmunt J., 3,783,703.
Sotak, John B.; and Williamson, Harold A. Power mower safety mechanism. 3,783,591, Cl. 56-10.200.
Soulier, Joel Henri Auguste. Microwave furnace for the treatment of sheets or plates made of a material absorbing said waves. 3,784,777, Cl. 219-10.550.
Souse, Anthony A.: *See—*
Durden, John A.; and Souse, Anthony A., 3,784,605.
Southam, Earl A.: *See—*

Hill, Vernon J., Jr.; Southam, Earl A.; and McDowell, John R., 3,784,133.

Southern Mills, Inc.: *See—*
Terry, Claude E., 3,783,479.

Southwell, William H.; and Walters, Richard M., to Owens-Illinois, Inc. Method and apparatus for measuring the index of refraction. 3,784,308, Cl. 356-128.000.

S.p.A. Virginio Rimoldi & C.: *See—*
Marforio, Nerino, 3,783,809.
Marforio, Nerino, 3,783,810.

Spangler, Herbert D., to Merck & Co., Inc. Cereals containing discrete nutrient particle on the surface. 3,784,716, Cl. 426-289.000.

Spanjer, Keith G., to Motorola, Inc. Ultrasonic bond control apparatus. 3,784,079, Cl. 228-1.000.

Specht, Glenn E., to American La France, Inc. Nozzle. 3,784,113, Cl. 239-460.000.

Speicher, Edwin W.: *See—*
Noble, Arthur J.; Speicher, Edwin W.; and Speicher, Walter J., 3,783,776.

Speicher, Walter J.: *See—*
Noble, Arthur J.; Speicher, Edwin W.; and Speicher, Walter J., 3,783,776.

Sperry Rand Corporation: *See—*
Burmeister, William W., 3,784,891.
Eckert, John Presper, Jr.; Weiner, James R.; Shaw, Robert F.; and Weiss, Herbert Frazer, 3,784,983.
Erspamer, James R.; and Snyder, George W., 3,784,753.
Haas, George C., 3,784,845.
Lonnemo, Kurt R., 3,784,327.
Pedersen, Nicholas F., 3,784,328.
Schultz, Richard Allen, 3,784,336.

Spooner, Michael: *See—*
Burnham, Donald; Honeyball, Samuel Walter; Spooner, Michael; and Lobb, Daniel Richard, 3,784,742.

Sprauer, Jerome William, to Du Pont de Nemours, E. I., and Company. Room temperature soluble melt-condensed polyamide interpolymers. 3,784,495, Cl. 260-18.00n.

Spraying Systems Co.: *See—*
Piggott, Richard G., 3,784,111.

Springfeld, Artur, to Kunststoffwerke Gebruder Anger GmbH. Disk extruder. 3,784,339, Cl. 425-133.000.

Spruyt, Harry; and Hoffman, Louis S., to Scott Paper Company. Moisture-impermeable package. 3,784,056, Cl. 221-63.000.

Squelch, John Edward. Cylinder block. 3,783,840, Cl. 123-65.00b.

Squibb, E. R., & Sons, Inc.: *See—*
Beer, Bernard; Clody, Donald E.; Vogel, John R.; and Horovitz, Zola P., 3,784,688.
Dursch, Friedrich, 3,784,562.
Yale, Harry L.; and Petigara, Ramesh, 3,784,548.
Yale, Harry L.; and Petigara, Ramesh B., 3,784,549.
Yale, Harry L.; and Petigara, Ramesh B., 3,784,550.

St. Cyr, David R.: *See—*
Osborn, Robert A.; St. Cyr, David R.; and Bullard, Herbert L., 3,784,530.

Stahle, Eugen: *See—*
Schneider, Wolfgang; Strohbeck, Gotthilf; Harlin, Walter; Ruckert, Friedrich; and Stahle, Eugen, 3,784,168.

Stahlwerke Sudwestfalen AG: *See—*
Randak, Alfred; and Michel, Karl, 3,784,418.

Stakhno, Vladimir Ivanovich. Apparatus for effecting pulse-wise control over a direct current motor. 3,784,880, Cl. 318-138.000.

Stalcup, Johnnie V.: *See—*
Towne, Richard C.; and Stalcup, Johnnie V., 3,783,815.

Stalder, Otto, to Establissement Temova. Waist support and hip girdle. 3,783,879, Cl. 128-570.000.

Stalker, James E., to Home Metal Products Company. Roof ventilator. 3,783,767, Cl. 98-42.000.

Standard Brands Incorporated: *See—*
Nelson, William Junior; and Hinman, Charles William, 3,784,409.

Standard Oil Company: *See—*
Fields, Ellis K.; and Puskas, Imre, 3,784,573.

Standard Oil Company (Indiana): *See—*
Akin, Cavit; and Chao, Kwei C., 3,784,536.
Husa, Howard W.; and Ginsburgh, Irwin, 3,783,911.

Stanley, John R.: *See—*
Finelli, Anthony F.; and Stanley, John R., 3,784,521.

Stanley Works, The: *See—*
Willard, Edwin J.; and Elmore, James, 3,783,773.

Stanton, Leo F., to American Shoe Machinery Corporation. Machine for applying pressure to shoe bottoms. 3,783,464, Cl. 12-142.00t.

Staples, John, to Mitchel & King Skates Limited. Ice skates. 3,784,217, Cl. 280-11.170.

Stauffer Chemical Company: *See—*
Large, George B., 3,784,589.
Lerner, Robert Wendell; Hayati, Hossein; and Flasch, John Robert, 3,784,505.
Toy, Arthur D. F.; and Uhing, Eugene A., 3,784,591.

Stearns, William P., to Shalako Resource Systems, Inc. Method and apparatus for providing electronic sound clarification for aurally handicapped persons. 3,784,745, Cl. 179-1.00n.

Stearns, William P.; and Lauchner, John K., to Shalako Resource Systems, Inc. Apparatus and prosthetic device for providing electronic correction of auditory deficiencies for aurally handicapped persons. 3,784,750, Cl. 179-1.00n.

Steele, Raymond Ernest, to Kwikform, Limited. Formwork for use in supporting shuttering. 3,784,151, Cl. 249-18.000.

Steffan, William J., to Burke Concrete Accessories, Inc. Concrete form snap-tie rod and method of forming the head therefor. 3,783,462, Cl. 10-27.00h.

Steidel, Charles A., to Bell Telephone Laboratories, Incorporated. Thin film resistors. 3,784,951, Cl. 338-262.000.

Stein, Lawrence, to United States of America, Atomic Energy Commission. Atmosphere purification of radon and radon daughter elements. 3,784,674, Cl. 423-249.000.

Steiner, Walter. Telescoping clothes dryer structure. 3,784,020, Cl. 211-1.300.

Steinhagen, Horst G., to Twin Disc, Incorporated. Power transmitting drive apparatus. 3,783,710, Cl. 74-665.0ga.

Steinhauer, Alfred F.; and McIntire, Otis R., to Dow Chemical Company, The. Process and compositions for preparing unique films having a multiplicity of voids and an organic material contained therein. 3,784,488, Cl. 260-2.50m.

Stephan, Hans: *See—*
Eggenspepger, Heinz; Franzen, Volker; and Stephan, Hans, 3,784,650.

Stephenson, Edward, Jr., to Stephenson Papesch Processes, Inc. Process of manufacturing pig iron. 3,784,370, Cl. 75-42.000.

Stephenson Papesch Processes, Inc.: *See—*
Stephenson, Edward, Jr., 3,784,370.

Steprath, Werner; and Birkholz, Manfred, to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft. Vibrator. 3,783,701, Cl. 74-87.000.

Sterling Drug Inc.: *See—*
Jefferies, Patrick J.; and Crounse, Nathan N., 3,784,599.

Stern, Andre: *See—*
Sausse, Andre; and Stern, Andre, 3,783,454.

Stern, Howard R.: *See—*
Fox, James H.; Leung, Han-Chung; and Stern, Howard R., 3,784,210.

Stern, Robert: *See—*
Lassau, Christian; Stern, Robert; and Sajus, Lucien, 3,784,481.

Steuernagel, Walter: *See—*
Ertl, Dietrich; Eishold, Horst-Gunter; Gilles, Helmut; Schmolling, Gunther; Steuernagel, Walter; and Nitz, Jurgen, 3,783,589.

Stevens, J. P., & Co., Inc.: *See—*
Tesoro, Giuliana C., 3,784,641.

Stewart, Kenneth James, to Dresser Industries, Inc. Cantry crane. 3,784,028, Cl. 212-11.000.

Stibbe-Monk Developments, Limited: *See—*
Ladyman, Francis Peter; and Gaunt, Dennis, 3,783,643.

Stich, Frederick A.: *See—*
Geiersbach, Allois F.; and Stich, Frederick A., 3,784,888.

Stoeckel, Albert L., to Picker Corporation, mesne. Scintillation scanner with remote control aperture. 3,784,818, Cl. 250-368.000.

Stoffel, John F., to Stoffel Seals Corporation. Turkey and roast lifter sling. 3,784,069, Cl. 224-49.000.

Stoffel Seals Corporation: *See—*
Stoffel, John F., 3,784,069.

Stokes, Robert C.: *See—*
Thornley, Gary M.; and Stokes, Robert C., 3,783,787.

Stoll, H., & Company: *See—*
Hadam, Wilhelm; and Goller, Ernst, 3,783,642.

Stone, Clement A., to Merck & Co., Inc. Method or treating hypertension. 3,784,703, Cl. 424-317.000.

Stone Container Corporation: *See—*
Meyer, Melvin H., 3,784,004.

Stone, Edwin A. Vehicle trailer. 3,784,218, Cl. 280-43.230.

Storch, Harold A. Roofing system. 3,783,570, Cl. 52-520.000.

Story, Jake T. Quail harness. 3,783,834, Cl. 119-96.000.

Stout, James T., to Mead Corporation, The. Article carrier. 3,784,053, Cl. 220-113.000.

Stow, James Albert: *See—*
Cuthbert, John; and Stow, James Albert, 3,784,938.

Strachan, Robert: *See—*
Goodhouse, Carl J.; and Strachan, Robert, 3,783,769.

Strandtmann, Max Von; Connor, David T.; and Shavel, John, Jr., to Warner-Lambert Company. 4-Substituted coumarins. 3,784,600, Cl. 260-343.20r.

Stratford, Henry Ralph. Aircraft landing gear. 3,784,131, Cl. 244-102.00r.

Strazik, William F.: *See—*
Perry, Eli; and Strazik, William F., 3,784,620.
Perry, Eli; and Strazik, William F., 3,784,624.
Perry, Eli; and Strazik, William F., 3,784,625.

Stringfellow, Arthur G.: *See—*
Wolff, Ivan A.; and Stringfellow, Arthur G., 3,784,114.

Strobel, Joseph; and Beisiegel, Norbert, to Schneider, Jos., & Co., Optische Werke. Defocusing device for optical systems. 3,784,290, Cl. 352-91.000.

Strobelt, William E.: *See—*
Das Khandelwal B.; and Strobelt, William E., 3,783,678.

Strohbeck, Gotthilf: *See—*
Schneider, Wolfgang; Strohbeck, Gotthilf; Harlin, Walter; Ruckert, Friedrich; and Stahle, Eugen, 3,784,168.

Strong, Herbert W.; Radway, Jerrold E.; and Cook, Henry A., to Basic Incorporated. Cyclical process for recovery of elemental sulfur from waste gases. 3,784,680, Cl. 423-571.000.

Stuber, Fred A.: *See—*
Sayigh, Adnan A. R.; Stuber, Fred A.; and Ulrich, Henri, 3,784,527.

Studer, James R., to Monsanto Company. Method for the selective absorption of a volatile liquid foaming agent by heating in forming plastic articles. 3,784,658, Cl. 264-45.000.

Stults, Allan C. Pendant capable of exposing different areas of a volatile tablet. 3,784,102, Cl. 239-36.000.

Stump, Paul W.; Huber, James A.; and Lipinski, John M., to Clevepak Corporation. Helically wound tubes. 3,783,908, Cl. 138-144.000.

Stumpf, Gunter. Cloth folding machine having means for control of the edges of cloth unwound from a roll. 3,784,184, Cl. 270-31.000.

Sturm, Elmar; and Vogel, Christian, to Ciba-Geigy Corporation. Bicyclo(N.1.0)alkyl ureas as herbicides. 3,784,368, Cl. 71-119.000.

Styers, Henry H., to Kloz-Seal Products Co., Inc. Tamperproof, recloseable package and closure therefor. 3,784,087, Cl. 229-62.000.

Suen, Tzeng Jiueq: *See—*
Schmitt, Edward Emil; Suen, Tzeng Jiueq; and Updegraff, Ivor Heberling, 3,784,585.

Sugden, Dave Charles. Pleasure boat construction. 3,783,461, Cl. 9-1.00r.

Suggitt, Robert M.: *See—*
Crone, John M., Jr.; and Suggitt, Robert M., 3,784,619.

Suggitt, Robert M.; Crone, John M., Jr.; and Arkell, Alfred. Hydroalkylation of mononuclear aromatic hydrocarbons. 3,784,617, Cl. 260-668.00r.

Suggitt, Robert M.; and Crone, John M., Jr., to Texaco Inc. Hydroalkylation process. 3,784,618, Cl. 260-668.00r.

Suggitt, Robert M., to Texaco Development Corporation. Disproportionation of alkaromatic hydrocarbons. 3,784,621, Cl. 260-672.00t.

Sugimori, Shiro, to Nippon Kagaku K.K. Motor drive for a camera. 3,783,762, Cl. 95-31.0el.

Sugiura, Toshihiro, to Aisin Seiki Kabushiki Kaisha. Cushioning device. 3,784,179, Cl. 267-35.000.

Suh, John T.; and Skorcz, Joseph A., to Colgate-Palmolive Company. Aryloxyalkylguanidines. 3,784,643, Cl. 260-564.00a.

Sullivan, William A., Jr.; and Griswold, Augustus W., to Xerox Corporation. Automatic microfiche copier. 3,784,303, Cl. 355-50.000.

Sulzer Brothers Limited: *See—*
Kreissig, Ernst Florian, 3,783,796.

Sumitoma Chemical Company, Limited: *See—*
Eukumaru, Toshitsugu; Hamma, Noritaka; Nakatani, Hiroshi; Fukushima, Hideaki; and Toki, Katsuyuki, 3,784,577.

Summa Corporation: *See—*
Amer, Kenneth B.; and Lund, Herbert T., 3,784,319.

Summerfield, William F., to Mattel, Inc. Phonograph for playing stationary record. 3,784,211, Cl. 274-9.00r.

Summersby, E. John; and Nagel, Dietmar, to Beverly Enterprises. Woman's hygiene apparatus. 3,783,867, Cl. 128-230.000.

Sun Research and Development Co.: *See—*
Moore, Robert E., 3,784,615.

Superior Industries, Inc.: *See—*
Yocum, Norman E.; and Mc Intyre, Frank H., Jr., 3,783,559.

Sutliff, Robert C.: *See—*
Bushnell, Clifford B.; Sheffer, Edward J.; and Sutliff, Robert C., 3,784,001.

Sutton, Blaine M.: *See—*
McGusty, Elizabeth R.; and Sutton, Blaine M., 3,784,687.

Sutton, Charles B.: *See—*
De Gioia, Peter A.; and Sutton, Charles B., 3,784,268.

Suzuki, Mamoru: *See—*
Okumura, Kentaro; Matsumoto, Kazuo; and Suzuki, Mamoru, 3,784,640.

Suzuki, Takenobu; Nagashima, Buemon; Inoue, Masayoshi; and Ito, Yoji, to Tokushu Toryo Co. Ltd. A.C. energized magnetic particle flaw detector with means to raise and lower electromagnets from path of workpiece. 3,784,904, Cl. 324-38.000.

Svanstrom, Kjell A. Method of producing refractory metal powder. 3,784,369, Cl. 75-.5bb.

Swanberg, Melvin E., to Xerox Corporation. Data insertion apparatus. 3,784,812, Cl. 355-41.000.

Swanson, Paul A.; and Wiele, Robert W., to Werner, Frank D. Wheel winch with universal hub. 3,784,163, Cl. 254-166.000.

Sybron Corporation: *See—*
Cowell, David, 3,784,877.
Tolliver, Peter Marvin, 3,784,836.

Sylvan, Tage Peter, to Teradyne, Inc. Sequential addressing network testing system. 3,784,910, Cl. 324-73.0at.

Szabo, Bela: *See—*
Felber, Julius, 3,784,204.

Szkrybalo, William: *See—*
Jaffe, Gerald Myer; Szkrybalo, William; and Weinert, Peter Hans, 3,784,408.

T. P. I. Limited: *See—*
Duval, Bruce, 3,783,530.

Takahashi, Michiaki, to Victor Company of Japan, Ltd. Vertical convergence circuit. 3,784,869, Cl. 315-13.00c.

Takahashi, Shogo; Yamada, Takayasu; and Okudaira, Hiromi, to Sankyo Company, Limited. Method for promoting formation of fruit abscising layer. 3,784,366, Cl. 71-90.000.

Takahashi, Yutaka: *See—*
Amagami, Keizo; Nishijyo, Masaru; Takahashi, Yutaka; and Nawa, Motoyuki, 3,783,904.

Takata, Toshikatsu: *See—*
Watanabe, Jun; Hosoi, Susmu; Kuwazaki, Masahiro; Ota, Akira; Takata, Toshikatsu; and Asaoka, Junichi, 3,784,413.

Takayanagi, Shigenao; and Nimoda, Toyoo, to Mitsubishi Jukogyo Kabushiki Kaisha. Folding apparatus. 3,784,187, Cl. 270-64.000.

Takeda Chemical Industries, Ltd.: *See—*
Yamano, Togo; Jono, Kumiko; Sato, Shigehiko; and Nakanishi, Michio, 3,784,699.

Takeda, Kouzou: *See—*
Makino, Katsuo; Joh, Seiji; and Takeda, Kouzou, 3,783,818.

Takemi, Chimo: *See—*
Nishida, Hiroshi; Yamamoto, Masao; Kitai, Atsuo; Ozaki, Asaichiro; Nishimura, Yokio; Takemi, Hiroto; and Takemi, Chimo, 3,784,446.

Takemi, Hiroto: *See—*
Nishida, Hiroshi; Yamamoto, Masao; Kitai, Atsuo; Ozaki, Asaichiro; Nishimura, Yokio; Takemi, Hiroto; and Takemi, Chimo, 3,784,446.

Takemoto, Takeo; Yamazaki, Eiich; Maruyama, Koichi; and Ueda, Toshio, to Hitachi, Ltd. Method and apparatus for manufacturing colour picture tubes. 3,783,754, Cl. 95-1.00r.

Takeuchi, Shigeo, to Takeuchi Tekko Kabushiki Kaisha. Car wheel washing apparatus. 3,783,465, Cl. 15-2.00e.

Takeuchi Tekko Kabushiki Kaisha: *See—*
Takeuchi, Shigeo, 3,783,465.

Takigawa, Tomishi: *See—*
Hirata, Noritsugu; and Takigawa, Tomishi, 3,784,291.

Tamate, Teruzo: *See—*
Ogasawara, Shoji; Tamate, Teruzo; and Sonobe, Toshimitsu, 3,783,698.

Tamenori, Tomoyoshi: *See—*
Yosioka, Satosi; Tokunaga, Sinobu; Tamenori, Tomoyoshi; Tamura, Sigeru; and Wada, Morio, 3,784,534.

Tamplen, Jack W. Seal that is responsive to either mechanical or pressure force. 3,784,214, Cl. 277-116.800.

Tamura Electric Works, Ltd.: *See—*
Ochiai, Jiru; and Nishina, Rintaro, 3,783,602.

Tamura, Sigeru: *See—*
Yosioka, Satosi; Tokunaga, Sinobu; Tamenori, Tomoyoshi; Tamura, Sigeru; and Wada, Morio, 3,784,534.

Tanabe Seiyaku Co., Ltd.: *See—*
Okumura, Kentaro; Matsumoto, Kazuo; and Suzuki, Mamoru, 3,784,640.

Tanaka, Haruo: *See—*
Nakayama, Kiyoshi; and Tanaka, Haruo, 3,784,444.

Tanaka, Kazuo, to Citizen Watch Company Limited. Alarm timepiece. 3,783,599, Cl. 58-16.500.

Tanimura, Takenori; and Ito, Yoichiro, to United States of America, Health, Education, and Welfare. Droplet counter current chromatography. 3,784,467, Cl. 210-31.00c.

Tanney, John W. Method and apparatus for measuring the density of a fluid. 3,783,676, Cl. 73-32.000.

Tao, Eddie Vi Ping, to Lilly, Eli, and Company. Preparation of 2,6-dinitro-4-alkylphenols. 3,784,613, Cl. 260-622.00p.

Tarasova, Alexandra Petrovna: *See—*
Nekrasov, Konstantin Dmitrievich; Tarasova, Alexandra Petrovna; Bljusin, Alfred Avgustovich; Avdeeva, Tamara Petrovna; Elin, Vyacheslav Alexandrovich; Roizman, Pavel Aronovich; and Denisenko, Alexandr Panteleevich, 3,784,385.

Tarnofsky, Benjamin. Carburetor for model aircraft. 3,784,174, Cl. 261-65.000.

Taylor, Brian W.: *See—*
Kobylinski, Tadeusz P.; and Taylor, Brian W., 3,784,675.

Taylor, Bruce F.: *See—*
McGlothlin, Raymond E.; Werlein, Eugene R.; Taylor, Bruce F.; and Schultz, Roger Lee, 3,784,579.

Taylor, Paul Franklin. Process for class IV B metals ore reduction (improvement). 3,784,593, Cl. 75-84.000.

Technicon Instruments Corporation: *See—*
Barton, Stephen R.; and Diebler, Herman G., 3,784,310.

Tedeco, N.V.: *See—*
Merklinghaus, Horst, 3,784,342.

Tedeco Verpachung G.m.b.H.: *See—*
Merklinghaus, Horst, 3,784,342.

Tel-Tone Corporation: *See—*
McIntosh, Alexander Charles; and Smith, Maurice Irvin, 3,784,758.

Telectron, Inc.: *See—*
Cook, John F., 3,783,556.

Telesio, George O. Vehicle with quick-disconnect engine module. 3,783,964, Cl. 180-64.001.

Televiso Electronics, Division of Domain Industries, Inc.: *See—*
Hanert, John A.; and Seversen, Gordon F., 3,783,987.

Ter Steege, Jan Hendrik: *See—*
DeVos, Ferdinand Allard; and Ter Steege, Jan Hendrik, 3,784,739.

Teradyne, Inc.: *See—*
Sylvan, Tage Peter, 3,784,910.

Terra Marine Scoop Company, Inc.: *See—*
Renfroe, Walter D., 3,784,166.

Terrell, Ross C., to Airco, Inc. Inhalant anesthetic composition and method. 3,784,706, Cl. 424-342.000.

Terry, Claude E., to Southern Mills, Inc. Method of preparing a nonwoven fabric. 3,783,479, Cl. 28-72.02r.

Tesoro, Giuliana C., to Stevens, J. P., & Co., Inc. N,N-bis alkoxymethyl and N,N-dimethylol sulfonamides. 3,784,641, Cl. 260-556.00a.

Tetra Pak International AB: *See—*

Rauser, Jan Axel Ingemar, 3,783,584.
Teutsch, George J.: *See—*
Shapiro, Elliot L.; Teutsch, George J.; and Herzog, Hershel L., 3,784,603.
Texaco Development Corporation: *See—*
Suggitt, Robert M., 3,784,621.
Texaco Inc.: *See—*
Bunn, Dorrance P., Jr.; and Jones, Henry E., 3,784,360.
Chafetz, Harry; Cullen, William P.; and Miller, Edward F., 3,784,645.
Crone, John M., Jr.; and Suggitt, Robert M., 3,784,619.
Patterson, John A., 3,784,566.
Reynolds, David L.; Youngblood, Douglas J.; Bunn, Dorrance P., Jr.; and Pratt, Roy E., 3,784,463.
Schievelbein, Vernon H.; Shankle, Leonard A.; and Wade, Herbert N., 3,783,943.
Siegart, William R.; Blackley, William D.; and Chafetz, Harry, 3,784,362.
Slater, William L.; Schlinger, Warren G.; and Crouch, William B., 3,784,364.
Suggitt, Robert M.; and Crone, John M., Jr., 3,784,618.
Texas Instruments, Incorporated: *See—*
Reedy, Carl D., Jr., 3,784,402.
Textron, Inc.: *See—*
Burke, George E., Jr.; Lemos, Walter G.; and Shippee, Dennis M., 3,784,077.
Dueringer, John Wilbur, 3,784,109.
Hadfield, Robert W.; and Harding, William H., 3,784,042.
Scherer, James P.; and Koerner, John A., 3,784,933.
Sherwood, Noble; and Lombard, Ralph, 3,783,851.
Wright, Raymond Grenville Whitehead, 3,783,965.
Thaler, Sherwood S.; and Daynard, Richard E., to American Optical Corporation. Atrial and ventricular pacer having independent rate and AV delay controls. 3,783,878, Cl. 128-419.00p.
Theissen, Robert J., to Mobil Oil Corporation. Substituted phenoxybenzoic acids and ester thereof. 3,784,635, Cl. 260-471.00r.
Theriault, Robert John, to Abbott Laboratories. Mycarosyl macrolide antibiotics. 3,784,447, Cl. 195-81.000.
Thiel, John A., to Bell & Howell Company. Paper edge transport system. 3,784,189, Cl. 271-45.000.
Thiel, John A., to Bell & Howell Company. Convertible power stacker. 3,784,191, Cl. 271-80.000.
Thomas, Lucius Ponder, to RCA Corporation. Leakage detector for determining possible shock hazards to humans. 3,784,903, Cl. 324-51.000.
Thomas, Morton I. Folding walker. 3,783,886, Cl. 135-45.00a.
Thomas, Philippe; and Meyer, Jacques, to Pechiney-Saint-Gobain. Copolymerizable composition of oligoesters having maleic acid end groups and vinyl monomers. 3,784,586, Cl. 260-861.000.
Thomas, Robert J.: *See—*
Tomalia, Donald A.; and Thomas, Robert J., 3,784,508.
Thompson, Buster Ray. Coke oven pushing and charging machine and method. 3,784,034, Cl. 214-21.000.
Thompson, Wendell L.: *See—*
Parr, Edward L., 3,783,729.
Thomson-CSF: *See—*
Tronc, Dominique; and Leboutet, Hubert, 3,784,873.
Thor Power Tool Company: *See—*
Danielson, Irvin R., 3,783,970.
Thorn Electrical Industries Limited: *See—*
Scott, Kenneth, 3,784,863.
Thornburgh, William F.: *See—*
Ranft, Ernst L.; and Thornburgh, William F., 3,783,848.
Thornley, Gary M.; and Stokes, Robert C., to Ireco Chemicals. Blasting charge and container therefor. 3,783,787, Cl. 102-24.00r.
Thornton, William M.: *See—*
Jennings, Robert R.; and Thornton, William M., 3,783,944.
Thurne Engineering Company Limited: *See—*
Hoyland, Trevor, 3,783,585.
Tiedeman, George T.: *See—*
Baxter, Gene F.; Freeman, Harlan G.; and Tiedeman, George T., 3,784,516.
Tiedeman, George T., to Weyerhaeuser Company. Rapid curing phenolic-aldehyde resin composition polymer modified with a heterocyclic nitrogen-containing compound. 3,784,514, Cl. 260-51.500.
Tier, Fred G.: *See—*
Paisley, George C.; and Tier, Fred G., 3,784,434.
Timber Research and Development Association: *See—*
Ollis, William J. B., 3,783,567.
Tirkkonen, Erkki Tapio. Dosing device utilizing an electronic scale and regulating means. 3,783,866, Cl. 128-213.000.
Tobin, Robert A. Tie rack. 3,783,995, Cl. 206-7.000.
Toda, Takao: *See—*
Kanayama, Mitsutoshi; and Toda, Takao, 3,784,298.
Toki, Katsuyuki: *See—*
Eukumaru, Toshitsugu; Hamma, Noritaka; Nakatani, Hiroshi; Fukushima, Hideaki; and Toki, Katsuyuki, 3,784,577.
Tokunaga, Sinobu: *See—*
Yosioka, Satosi; Tokunaga, Sinobu; Tamenori, Tomoyoshi; Tamura, Sigeru; and Wada, Morio, 3,784,534.
Tokushu Toryo Co. Ltd.: *See—*
Suzuki, Takenobu; Nagashima, Buemon; Inoue, Masayoshi; and Ito, Yoji, 3,784,904.
Tokuyama Soda Kabushiki Kaisha: *See—*
Mizutani, Yukio; Sata, Toshikatsu; Izuo, Ryuji; and Yamane, Reiichi, 3,784,457.
Tokuyama, Takashi; and Mori, Takaaki, to Hitachi, Ltd. Method of producing semiconductor devices. 3,783,500, Cl. 29-577.000.
Tokyo Ferrite Manufacturing Company, Ltd.: *See—*
Saito, Susumu, 3,783,716.
Tokyo Magnetic Printing Company, Ltd.: *See—*
Namikawa, Mamoru; and Arai, Kaneyoshi, 3,784,796.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Asanuma, Kazuyoshi, 3,784,776.
Minami, Hiroshi; Ando, Masao; and Obata, Yoshiharu, 3,784,741.
Tokyo Shibaura Electric Company, Ltd.: *See—*
Niitu, Moritada; and Ide, Toshio, 3,784,031.
Tolle, Gunter. Work clamp mechanism for sewing machines. 3,783,807, Cl. 112-76.000.
Tolliver, Peter Marvin, to Sybron Corporation. IR generator having ellipsoidal and paraboloidal reflectors. 3,784,836, Cl. 250-495.000.
Tolochko, Cheslav Stanislavovich; Popov, Vladimir Ivanovich; Tsitsiv, Miron Vasilievich; Varfolomeev, Alexandr Nikolaevich; and Gervolsky, Marlen Mikhailovich. Grape harvester. 3,783,595, Cl. 56-331.000.
Tomalia, Donald A.; and Thomas, Robert J., to Dow Chemical Company, The. Rapid cure polyepoxide oxazine or oxazoline systems. 3,784,508, Cl. 260-47.0en.
Tomalty, Donald Ernest. Clip structure and conveying means. 3,783,994, Cl. 198-179.000.
Tomashek, James R.: *See—*
Crowell, Jack R.; Tomashek, James R.; and Ward, Donald H., 3,783,932.
Tomcufcik, Andrew Stephen; Child, Ralph Grassing; and Sloboda, Adolph Edward, to American Cyanamid Company. Compositions containing substituted benzoylpropionic acids and method of use to treat inflammation and pain. 3,784,701, Cl. 424-317.000.
Tomezsko, Edward S. J., to Atlantic Richfield Company. Oxidative dehydrogenation catalyst. 3,784,485, Cl. 252-467.000.
Tomlin, Jerry B., to ACF Industries, Incorporated. Ball and seat arrangement for ball valve. 3,784,155, Cl. 251-181.000.
Topalian, Harry H.: *See—*
McReynolds, James L.; and Topalian, Harry H., 3,784,714.
Tornabene, Salvatore J. Drain cleaner. 3,783,457, Cl. 4-225.000.
Torrant, James Peter; and Benson, Carl P., to Torrington Company, The. Knitting machine needle. 3,783,647, Cl. 66-123.000.
Torres, Julian. Glazier's point holder. 3,783,919, Cl. 145-46.000.
Torrington Company, The: *See—*
Torrant, James Peter; and Benson, Carl P., 3,783,647.
Toscano, Esteban J.: *See—*
Castro, Rodolfo; Toscano, Esteban J.; and Siosca, Felix Jerome, 3,784,183.
Toshiba Kakai Kabushiki Kaisha: *See—*
Ashizawa, Yoshimi, 3,783,665.
Touchette, John W.: *See—*
Woodhall, Edwin S.; Appleby, Paul E.; and Touchette, John W., 3,784,426.
Tourret, Jean: *See—*
Brelot, Rene; and Tourret, Jean, 3,784,309.
Towmotor Corporation: *See—*
Shaffer, Walter M., 3,783,962.
Towne, Richard C.; and Stalcup, Johnnie V. Heavy duty marine anchor. 3,783,815, Cl. 114-208.00r.
Toy, Arthur D. F.; and Uhing, Eugene A., to Stauffer Chemical Company. Bis (α,beta-dihaloalkyl) 1-acyloxyalkane phosphonates. 3,784,591, Cl. 260-952.000.
Toy, William W. Periscopic viewing system. 3,784,288, Cl. 350-301.000.
Toyo Kogyo Co., Ltd.: *See—*
Shimizu, Hiroshi, 3,783,839.
Trachsel, Fred W.: *See—*
Kohler, Hans Karl; and Trachsel, Fred W., 3,784,253.
Trame, Charles E., to Everbrite Electric Signs, Inc. Digital clock display. 3,783,539, Cl. 40-28.00c.
Trane Company, The: *See—*
Modahl, Robert J.; and Lynch, Paul J., 3,783,631.
Transidyne General Corporation: *See—*
Broek, Jan A. Vanden, 3,784,789.
Trecker, David John: *See—*
Columb, Henry Octave, Jr.; and Trecker, David John, 3,784,492.
Treus, Aloys: *See—*
Greive, Aloys; and Treus, Aloys, 3,783,597.
Trimble, Lester B.; and Sopinski, Zygmunt J., to Jo-Line Tools, Inc. Ratchet mechanism. 3,783,703, Cl. 74-157.000.
Trio Kabushiki Kaisha; a/t/a Trio Electronics, Inc.: *See—*
Shigeyama, Shogo; Yamada, Yoichiro; and Kondo, Kunihiro, 3,784,749.
Tripathi, Krishna Chandra, to Alcan Research and Development Limited. Process for control of lubricants in an aluminum rolling mill. 3,783,664, Cl. 72-42.000.
Troglione, Vincent R., to Moody Aquamatic Systems, Inc. Ozonating apparatus for drinking water. 3,784,008, Cl. 210-104.000.
Trolle, Sten: *See—*
Von Platen, Baltzar; Jonsson, Einn Lennart; and Trolle, Sten, 3,783,775.
Tronc, Dominique; and Leboutet, Hubert, to Thomson-CSF. Device for bunching the particles of a beam, and linear accelerator comprising said device. 3,784,873, Cl. 315-541.000.
Truica, Vasile: *See—*

Coanda, Henry; Aldea, Gheorghe; Bodea, Ion; Truica, Vasile; Hanciulescu, Valentin; Posirca, Radu; Lazar, Cristian; and Gabor, Iacob, 3,784,325.

Trusselle, William H., to Pneumatic Scale Corporation. Control for container filling machine. 3,783,913, Cl. 141-46.000.

TRW Inc.: *See—*
Newbold, Thomas, 3,784,731.
Wuerker, Ralph F.; and Heflinger, Leo O., 3,784,276.

Tsitsiv, Miron Vasilievich: *See—*
Tolochko, Cheslav Stanislavovich; Popov, Vladimir Ivanovich; Tsitsiv, Miron Vasilievich; Varfolomeev, Alexandr Nikolaevich; and Gervolsky, Marlen Mikhailovich, 3,783,595.

Tsujimoto, Kayoshi; Yata, Kotaro; and Matsuda, Motonobu, to Minolta Camera Kabushiki Kaisha. Compound light receiving elements for exposure meters. 3,783,758, Cl. 95-10.00c.

Tung, Ching C.: *See—*
Chupp, John P.; and Tung, Ching C., 3,784,544.

Turner, Abner B., to Westinghouse Electric Corporation. Waste and water treatment system. 3,784,014, Cl. 210-263.000.

Tuttle, Eleanor Porter: *See—*
Tuttle, Fordyce E., 3,784,306.

Tuttle, Fordyce E.; deceased (by Tuttle, Eleanor Porter; executrix). Simultaneous multiple stroboscopic interrogation of memory. 3,784,306, Cl. 356-23.000.

Tuttle, Louis P. Primer feeder for hand loading operations. 3,784,057, Cl. 221-196.000.

Twin Disc, Incorporated: *See—*
Steinhagen, Horst G., 3,783,710.

Tyco Laboratories, Inc.: *See—*
Cocks, Franklin H.; and Bates, Herbert E., 3,784,860.

Tyler, Hugh J.: *See—*
Wolfe, Denis G.; and Tyler, Hugh J., 3,784,351.

UCB Societe Anonyme: *See—*
Loffet, Albert, 3,784,523.
Slinko, Mikhail Gavrilovitch, 3,784,561.

Uchida, Tadao: *See—*
Kawai, Isamu; Uchida, Tadao; and Ishima, Kenji, 3,784,173.

Uchiyama, Yasuji, to Nippon Gakki Seizo Kabushiki Kaisha. Touch-responsive keying circuit for electronic musical instruments. 3,784,718, Cl. 84-1.130.

Udy, Lex L.: *See—*
Murphy, Charles H.; and Udy, Lex L., 3,783,735.

Ueba, Akio: *See—*
Hatanaka, Yoshihiro; Shigemori, Hideto; and Ueba, Akio, 3,784,790.

Ueda, Toshio: *See—*
Takemoto, Takeo; Yamazaki, Eiichi; Maruyama, Koichi; and Ueda, Toshio, 3,783,754.
Yamazaki, Eiichi; Maruyama, Koichi; and Ueda, Toshio, 3,784,282.

Ugine Kuhlmann: *See—*
Isard, Arsene; and Weiss, Francis, 3,784,567.

Uhing, Eugene A.: *See—*
Toy, Arthur D. F.; and Uhing, Eugene A., 3,784,591.

Uhlig, Albert R., to Owens-Illinois, Inc. Plastic bottle manufacture. 3,783,724, Cl. 83-140.000.

Uhlig, Albert R., to Owens-Illinois, Inc. Plastic bottle manufacture. 3,784,038, Cl. 215-1.00c.

Uki, Northiro: *See—*
Motegi, Shoji; Uki, Northiro; and Mito, Sadao, 3,784,855.

Ulda, Kanji: *See—*
Hirao, Shoichi; Ihara, Satoshi; and Ulda, Kanji, 3,784,175.

Ulrich, Henri: *See—*
Sayigh, Adnan A. R.; Stuber, Fred A.; and Ulrich, Henri, 3,784,527.

Unarco Industries, Inc.: *See—*
Moyer, Harris P.; and Klein, Herbert H., 3,783,498.

Under Sea Industries, Inc.: *See—*
Christianson, Raymond A., 3,783,891.

Ungerer, Irma: *See—*
Munchbach, Curt, 3,783,667.

Uni-Systems, Inc.: *See—*
Gold, Ronald J., 3,784,027.

Unican Security Systems, Ltd.: *See—*
Gill, Vincent A., 3,783,660.

Union Carbide Corporation: *See—*
Columb, Henry Octave, Jr.; and Trecker, David John, 3,784,492.
Durden, John A.; and Souse, Anthony A., 3,784,605.
King, Paul A., 3,783,872.
Neale, Robert Schwenn, 3,784,609.
Papa, Anthony Joseph; and Proops, William Robert, 3,784,594.
Raudys, Vytas Andrew, 3,783,580.

Union Oil Company of California: *See—*
Fenton, Donald M., 3,784,616.

United Aircraft Corporation: *See—*
Van Orden, William H., 3,783,723.
Waehner, Glenn C., 3,784,737.

United Aircraft Products, Inc.: *See—*
Simmons, Carl E.; and Fernandes, Joseph F., 3,783,935.

United Kingdom Atomic Energy Authority: *See—*
Hardy, Harold Kenyon, 3,784,660.

United Kingdom of Great Britain & Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the: *See—*
Newell, Cyril, 3,784,132.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Cantwell, Hugh Francis, 3,783,903.

United States of America
Agriculture: *See—*
Wolff, Ivan A.; and Stringfellow, Arthur G., 3,784,114.
Air Force: *See—*
Hedberg, Frederick L.; and Marvel, Carl S., 3,784,517.
Army: *See—*
Arndt, Robert C., 3,784,751.
Baumann, Robert F.; Bozza, Eugene F.; and Hunt, Gardner S., 3,784,419.
Hopkins, Ralph E., 3,784,415.
Levy, Marilyn; and Leschander, Richard G., 3,784,377.
Atomic Energy Commission: *See—*
Mason, Charles H., 3,783,680.
Schutt, Dale W.; and Beck, Gerhard O., 3,784,909.
Stein, Lawrence, 3,784,674.
Webb, Ronald W., 3,784,384.
Health, Education, and Welfare: *See—*
Tanimura, Takenori; and Ito, Yoichiro, 3,784,467.
Interior: *See—*
Elges, Carl H., III; Hasket, Philip R.; Bauer, Donald J.; and Lindstrom, Roald E., 3,784,669.
National Aeronautics and Space Administration: *See—*
Krupnick, Albert C.; Key, Carlo F.; and Harwell, Roger J., 3,784,499.
Navy: *See—*
Benson, Alden P.; Foster, Kenneth J.; and Quellette, Alfred R., 3,783,452.
Ciani, John B.; and Luthy, Richard G., 3,783,524.
Gordon, Donald T., 3,784,312.
Johnson, Norman F.; and Smith, Elmer R., 3,784,766.
Kessler, Hyman; and Peritt, Harvey L., 3,784,235.
Mansnerus, Harlan H., 3,784,924.
Muraoka, James S., 3,784,357.
Polcha, Raymond J., 3,783,790.
Rolle, Albert L., 3,784,805.
Schoen, Oscar W., Jr., 3,783,505.
Transportation: *See—*
Apgar, Edward G., 3,783,967.

United States Steel Corporation: *See—*
Leedy, Verne B., 3,783,933.

Universal Instruments Corporation: *See—*
Ragard, Phillip A.; and Paton, Jim, 3,783,488.

Universal Machine Company, Inc.: *See—*
Harris, Ted D., 3,784,120.

Universal Product Development Corporation: *See—*
Peters, James R., 3,783,555.

University of Michigan, The Regents of the: *See—*
Counsell, Raymond, 3,784,576.

Uniwave, Inc.: *See—*
Heinrichs, Roland P., 3,783,648.

Uno, Naoyuki; Nomura, Katsuhiko; Sakazaki, Tadazumi; Watanabe, Koichiro; Miyata, Katsuhiko; and Urano, Fumio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Photometric device in a single lens reflex camera of through-the-lens type. 3,783,765, Cl. 95-42.000.

Updegraff, Ivor Heberling: *See—*
Schmitt, Edward Emil; Suen, Tzeng Jiueq; and Updegraff, Ivor Heberling, 3,784,585.

Upjohn Company, The: *See—*
Sayigh, Adnan A. R.; Stuber, Fred A.; and Ulrich, Henri, 3,784,527.

Ura, Junichi: *See—*
Moritan, Norishige; Moriya, Ikuro; Ura, Junichi; and Koono, Makoto, 3,784,761.

Urano, Fumio: *See—*
Uno, Naoyuki; Nomura, Katsuhiko; Sakazaki, Tadazumi; Watanabe, Koichiro; Miyata, Katsuhiko; and Urano, Fumio, 3,783,765.

Urban, Friedrich: *See—*
Pfannmueller, Helmut; Urban, Friedrich; Buechner, Oskar; Gropper, Hans; and Sistig, Wolf, 3,784,538.

Urbanek, Edwin A.; and Vock, Richard C., to Xerox Corporation. Ion film regulating device. 3,783,826, Cl. 118-620.000.

Urbanosky, Harold J., to Schlumberger Technology Corporation. Apparatus for plugging well bores with hardenable fluent substances. 3,783,940, Cl. 166-181.000.

U.S. Chemicals and Plastics, Inc., A Div. of Alco Standard Corporation: *See—*
McVay, Malcolm Scott C., 3,784,005.

U.S. Philips Corporation: *See—*
Anderson, Charles Henri Joseph; and Verwegen, Henricus Johannes, 3,784,143.
Auphan, Michel Joseph; and Martin Guy, 3,783,515.
Boekkooi, Anton; and Heeman, Andreas Maria, 3,784,807.
De Wilde De Ligny, Johan Herman; De Wit, Cornelis Leendert; and Van Rooij, Petrus Johannes Cornelius, 3,783,612.
Foederer, Antonius Franciscus; Franken, Andrianus Jacobus Jozef; and Van Noord, Jacobus Andrianus Johannes Maria, 3,783,707.
Geominy, Louis Joseph Henri; Gommans, Hubertus Johannes Josephus; Mans, Leonardus Frans Helene; and Ruytenbeek, Silvester Marie, 3,784,784.

Jackson, John; and Bradshaw, Robert Fagan Donat, 3,784,307.
Meijer, Roelf Jan; and Jaspers, Hendrik Alphons, 3,783,745.
Notelteirs, Victor Rosallie; and Goorissen, Jan, 3,784,861.
Reifenschweiler, Otto, 3,784,824.
Vacher, Pierre, 3,784,871.
Wiedijk, Piet, 3,784,275.

Ushihara, Masaharu: *See—*
Nagahiro, Michinori; Yabu, Toshiomi; Hosono, Hiroo; and Ushihara, Masaharu, 3,784,128.

Vacher, Pierre, to U.S. Philips Corporation. Circuit arrangement for generating a sawtooth current through a deflection coil. 3,784,871, Cl. 315-27.0td.

Valmont Industries Inc.: *See—*
Karmann, Thomas R.; and Adams, Alton A., 3,784,081.

Van Aken, Harold R., to Kollmorgen Corporation. Automatic zero device. 3,784,912, Cl. 324-130.000.

Van der Burgt, Gerrit Johan; and Ryba, Dusan, to Van Doorne's Bedrijfswagenfabriek Daf B.V. Suspension system for road transport vehicles. 3,784,219, Cl. 280-104.000.

van der Lely, Ary; and Gerardus Bom, Cornelis Johannes. Cultivators. 3,783,948, Cl. 172-49.000.

Van Doorne's Bedrijfswagenfabriek Daf B.V.: *See—*
Van der Burgt, Gerrit Johan; and Ryba, Dusan, 3,784,219.

Van Dorn Company: *See—*
McKernan, Bernard J., 3,784,048.

Van Gemert, Josephus Antonius, to Van Gemert, N.V. Rotary soil working machine. 3,783,952, Cl. 172-540.000.

Van Gemert, N.V.: *See—*
Van Gemert, Josephus Antonius, 3,783,952.

Van Hengel, Anthonie, to Hulettis Sugar Corporation Limited. Evaporators with mixing condensers. 3,784,450, Cl. 202-185.000.

Van Horn, Lawrence E.; Elliot, William H.; and Schuchmann, Russell P., to Cutler-Hammer, Inc. Off-delay timing apparatus. 3,784,881, Cl. 317-141.00s.

Van Hulse, Jacques: *See—*
Bingen, Roald; and Van Hulse, Jacques, 3,784,946.

Van Kampen, Daniel Marten; and Weenen, Jacobus Hendricus Marinus, to Lever Brothers Company. Detergent composition. 3,784,476, Cl. 252-109.000.

Van Noord, Jacobus Andrianus Johannes Maria: *See—*
Foederer, Antonius Franciscus; Franken, Andrianus Jacobus Jozef; and Van Noord, Jacobus Andrianus Johannes Maria, 3,783,707.

Van Orden, William H., to United Aircraft Corporation. Method of cutting thin, brittle material. 3,783,723, Cl. 83-21.000.

Van Rooij, Petrus Johannes Cornelius: *See—*
De Wilde De Ligny, Johan Herman; De Wit, Cornelis Leendert; and Van Rooij, Petrus Johannes Cornelius, 3,783,612.

Van Staveren, Pieter, to Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid, Handel en Verkeer. Centrifugal fluid vanes compressor. 3,784,324, Cl. 417-67.000.

Vancini, Carlo A.: *See—*
Arnold, Orlan M.; and Vancini, Carlo A., 3,784,017.

Vanderberg, Lawrence J.: *See—*
Burgett, James F.; Vanderberg, Lawrence J.; and Woodward, Gary F., 3,784,973.

Vanderbrook, William R. Toilet operating assembly. 3,783,455, Cl. 4-1.000.

Vanek, Stanley Donald: *See—*
Nicholson, Thomas W.; Jorgensen, Ray B.; and Vanek, Stanley Donald, 3,783,916.

Varfolomeev, Alexandr Nikolaevich: *See—*
Tolochko, Cheslav Stanislavovich; Popov, Vladimir Ivanovich; Tsitsiv, Miron Vasilievich; Varfolomeev, Alexandr Nikolaevich; and Gervolsky, Marlen Mikhailovich, 3,783,595.

Varon, Albert S.; and Siegal, Burton L., to Crown Metal Manufacturing Company. Hang rail support structure. 3,784,023, Cl. 211-105.100.

Vasta, Joseph A., to Du Pont de Nemours, E. I., and Company. Polyvinylidene fluoride coating compositions. 3,784,506, Cl. 260-39.00r.

Vater, Wulf: *See—*
Bossert, Friedrich; Vater, Wulf; Bauer, Kurt; and Adams, Karl-Heinz, 3,784,684.

Vaughan, Desmond H., to General Dynamics Corporation. Expandable truss structure. 3,783,573, Cl. 52-646.000.

Vayda, Pierre Andre: *See—*
Rocher, George; and Vayda, Pierre Andre, 3,784,177.

VEB Kombinat Mess-und Regelungstechnik Dessau: *See—*
Schwarz, Arnulf; Konig, Gerhard; and Pieloth, Manfred, 3,783,902.

Veb Wirkmaschienbau Karl-Marx-Stadt: *See—*
Mutze, Heinz; Barth, Gerhard; and Kertzscher, Klaus, 3,783,644.

Veb Wirkmaschinenbau Karl-Marx-Stadt: *See—*
Naumann, Siegfried; Lauchner, Manfred; Golbs, Christian; and Schubert, Harry, 3,783,646.

VEBA Chemie Aktiengesellschaft: *See—*
Ester, Wilhelm; and Heitmann, Wilhelm, 3,784,614.

Velsicol Chemical Corporation: *See—*
Gourse, Jerome A., 3,784,652.

Velthoven, Arthur E., to Federal Screw Works. Clamp load indicating and sealing fastener assembly. 3,783,734, Cl. 85-62.000.

Vepa AG: *See—*
Fleissner, Heinz, 3,783,526.

Verdier, Henri, to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie. Tire and rim structure for construction equipment. 3,783,927, Cl. 152-409.000.

Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft: *See—*
Maurer, August, 3,783,937.

Vereinigte Papierwerke Schickedanz & Co.: *See—*
Schuster, Wilhelm, 3,784,425.

Verenigde Fabrieken Van L. J. Heijmeijer N.V.: *See—*
Heijmeijer, Carolus Lambertus Josephus Antonius Maria, 3,783,750.

Vergasson, Michel, to Commissariat a l'Energie Atomiqut exchangers in nuclear reactors. . 3,784,443, Cl. 176-63.000.

Verhey, Adriaan. Baker's oven. 3,784,354, Cl. 432-152.000.

Versteeg, Geert; and Engel, Albertus J. G., to Reactor Centrum Nederland. Method for the preparation of metal borides. 3,784,677, Cl. 423-252.000.

Verwegen, Henricus Johannes: *See—*
Anderson, Charles Henri Joseph; and Verwegen, Henricus Johannes, 3,784,143.

Victor Company of Japan, Ltd.: *See—*
Moritan, Norishige; Moriya, Ikuro; Ura, Junichi; and Koono, Makoto, 3,784,761.
Takahashi, Michiaki, 3,784,869.

Vida, Julius A.: *See—*
Samour, Carlos M.; and Vida, Julius A., 3,784,547.

Viles, Alan H.: *See—*
Raymond, David G.; Smith, Gary C., Jr.; and Viles, Alan H., 3,783,743.

Vissers, H., N.V.: *See—*
Konig, Karl-Heinz; and Huntrup, Antonius, 3,783,533.

Visual Graphics Corporation: *See—*
Friedel, Murray, 3,783,756.

Vock, Richard C.: *See—*
Urbanek, Edwin A.; and Vock, Richard C., 3,783,826.

Vockenhuber, Karl: *See—*
Muszumanski, Trude; and Gela, Helmut, 3,784,283.
Schild, Josef; and Wessner, Harald, 3,783,761.

Vogel, Christian: *See—*
Sturm, Elmar; and Vogel, Christian, 3,784,368.

Vogel, John R.: *See—*
Beer, Bernard; Clody, Donald E.; Vogel, John R.; and Horovitz, Zola P., 3,784,688.

Vogt, Wilhem; and Richtzenhain, Herman, to Dynamit Nobel Aktiengesellschaft. Method for the preparation of acetals and ketals of alpha-chlorinated aldehydes and ketones. 3,784,612, Cl. 260-615.00a.

Voitik, Robert M., to Innovatex Corporation. Rotary face seal assembly. 3,784,213, Cl. 277-40.000.

Volkswagenwerk Akt.: *See—*
Adler, Jurgen; Erck, Karl; Klebba, Horst; Kramer, Wolfgang; Maneck, Ernst; Mueller-Eckhardt, Hans; and Schwenk, Kurt, 3,783,568.

Von Arnim, Dietlof. Steaming and ironing appliance. 3,783,538, Cl. 38-97.000.

Von Platen, Baltzar; Jonsson, Einn Lennart; and Trolle, Sten, to Etablissement Radiator. Stands for presses. 3,783,775, Cl. 100-214.000.

Von Schoppe, Bertram A., to Compo Industries Inc. Matrix for supporting a unit sole for roughing or the application of adhesive. 3,783,463, Cl. 12-17.00r.

Voser, Albert, to Inventio AG. Door actuation apparatus with locking mechanism for elevators. 3,783,977, Cl. 187-52.000.

Vossen, George Manfred. Method and device for breaking away prestamped pieces of material in sheet-like. 3,784,070, Cl. 225-1.000.

Vosteen, Robert E.; and Werner, Alan J., Jr. Amplitude stabilized oscillator. 3,784,930, Cl. 331-183.000.

Wachs, Meyer Herbert: *See—*
Hughes, Harry Elroy, Jr.; and Wachs, Meyer Herbert, 3,783,499.

Wacker, Oskar: *See—*
Frel, Jorg; Morel, Charles J.; and Wacker, Oskar, 3,784,602.

Wacker-Chemie GmbH: *See—*
Bergmeister, Eduard; Kirst, Paul-Gerhard; and Winkler, Heinz, 3,784,648.

Wada, Morio: *See—*
Yosioka, Satosi; Tokunaga, Sinobu; Tamenori, Tomoyoshi; Tamura, Sigeru; and Wada, Morio, 3,784,534.

Wada, Waichi. Door lock. 3,783,658, Cl. 70-110.000.

Wade, Herbert N.: *See—*
Schievelbein, Vernon H.; Shankle, Leonard A.; and Wade, Herbert N., 3,783,943.

Wadia, Aspi B.: *See—*
Carter, William C.; and Wadia, Aspi B., 3,784,977.

Waehner, Glenn C., to United Aircraft Corporation. Hybrid data compression. 3,784,737, Cl. 178-6.000.

Wagner, David P., to Illinois Tool Works Inc. Screw fastener and method of applying same. 3,783,921, Cl. 151-41.700.

Wagner, George M., to Hooker Chemical Corporation. Cellulosic flame retardant system. 3,784,356, Cl. 8-196.000.

Wagner, Harry M., Jr., to Western Electric Company, Incorporated. Terminal ejector device. 3,783,486, Cl. 29-203.00p.

Wagner, Karl; Rosenberg, Otto; and Hummel, Adam, to Agfa-Gevaert Aktiengesellschaft. Photographic apparatus for the making of exposures in artificial light. 3,783,757, Cl. 95-10.0ce.

Wagner, Karl; and Nicolay, Klaus, to Agfa-Gevaert Aktiengesellschaft. Electronic exposure control arrangement in photographic apparatus. 3,783,759, Cl. 95-10.0ct.

Wakitani, Mitsuru: *See—*
Sekiguchi, Hideto; Matsumura, Yasuo; Arai, Kojiro; Haruyama, Kunio; and Wakitani, Mitsuru, 3,784,666.

Wal Vac, Inc.: *See—*
Mol, Jacob C., 3,783,472.

Waldbillig, Charles C., to Medix, Inc. Stop cock. 3,783,900, Cl. 137-625.470.

Waldes Kohinoor, Inc.: *See—*
Doran, E. James; and Berliner, Wallace H., 3,783,638.

Waldkirch, Richard B., to Du Pont de Nemours, E. I., and Company. Jet application of textile finish to moving threadlines. 3,783,596, Cl. 57-157.00f.

Walker Forge, Inc.: *See—*
Andresen, Arne O., 3,783,673.

Walker, Harold L. Turbine engine. 3,783,614, Cl. 60-39.18r.

Walls, Leslie Percy, to Burroughs Wellcome. 1-Amidino-3-(cyanophenyl)-ureas. 3,784,582, Cl. 260-465.00d.

Walser, Armin: *See—*
Hellerbach, Joseph; and Walser, Armin, 3,784,542.

Walters, Joseph J.; and McGibbon, Verdun R., to Lukens Steel Company. Expendable work support for a burning table. 3,784,176, Cl. 266-1.00r.

Walters, Richard M.: *See—*
Southwell, William H.; and Walters, Richard M., 3,784,308.

Wamser, Christian A.: *See—*
Morgan, Thomas R.; Low, William W.; Wamser, Christian A.; and Bruen, Charles P., 3,784,672.

Wangsness, Peter A. A. Homopolar motor forming a sound record support. 3,784,853, Cl. 310-178.000.

Wanner, Joseph W., to General Motors Corporation. Moisture eliminator with regenerative purge cycle. 3,784,220, Cl. 280-124.00f.

Ward, Donald H.: *See—*
Crowell, Jack R.; Tomashek, James R.; and Ward, Donald H., 3,783,932.

Ward, Elmer E., to Smith, F. P., Corporation. Automatic transmission fluid filter. 3,784,011, Cl. 210-168.000.

Ward, Richard W., to KD Lamp Co. Alternately flashing warning system. 3,784,975, Cl. 340-76.000.

Wareham, Richard R.: *See—*
Allen, Joseph H.; and Wareham, Richard R., 3,783,760.

Warner & Swasey Company, The: *See—*
Guliotta, Donald R., 3,783,719.

Warner-Lambert Company: *See—*
Dawidowicz, Jan; and Ferraro, Frank A., 3,783,510.
Ercoli, Alberto; and Gardi, Rinaldo, 3,784,692.
Lane, George C., 3,784,458.
Strandtmann, Max Von; Connor, David T.; and Shavel, John, Jr., 3,784,600.

Warner-Lambert Company: *See—*
Dawidowicz, Jan; and Ferraro, Frank A., 3,783,493.

Wascon Systems, Incorporated: *See—*
Buckman, Wayne T.; Miller, Blaine Monroe; and Lewis, Thomas Robert, 3,784,116.

Watanabe, Akinori: *See—*
Sasaki, Rentaro; Watanabe, Akinori; Ogasawara, Tatsuo; Watanabe, Satosh; and Sogabe, Hidetoshi, 3,784,864.

Watanabe, Jun; Hosoi, Susmu; Kuwazaki, Masahiro; Ota, Akira; Takata, Toshikatsu; and Asaoka, Junichi, to Matsushita Electric Industrial Co., Ltd. Dry cells. 3,784,413, Cl. 136-131.000.

Watanabe, Koichiro: *See—*
Uno, Naoyuki; Nomura, Katsuhiko; Sakazaki, Tadazumi; Watanabe, Koichiro; Miyata, Katsuhiko; and Urano, Fumio, 3,783,765.

Watanabe, Rinzo; and Shimojima, Masatoshi, to Ponder & Best, Inc. Zoom lens. 3,784,285, Cl. 350-187.000.

Watanabe, Satosh: *See—*
Sasaki, Rentaro; Watanabe, Akinori; Ogasawara, Tatsuo; Watanabe, Satosh; and Sogabe, Hidetoshi, 3,784,864.

Watanabe, Toshiro; and Kubota, Yasuharu, to Sony Corporation. Color image pickup device. 3,784,734, Cl. 178-5.4st.

Waters, James B., Jr. Music box. 3,783,730, Cl. 84-94.000.

Watt, J. Donald; and Molzahn, Herbert W., to International Harvester Company. Harvester platform suspension and linkage system. 3,783,594, Cl. 56-15.800.

Webb, Ronald W., to United States of America, Atomic Energy Commission. High temperature ceramic composition for hydrogen retention. 3,784,384, Cl. 106-39.000.

Webcraft Packaging, Inc.: *See—*
Katz, Robert E., 3,784,185.

Weber, Erich: *See—*
Martin, Johannes Josef; Martin, Walter Josef; and Weber, Erich, 3,783,803.

Weber, Fred A.: *See—*
Caputo, James P.; and Weber, Fred A., 3,784,801.

Weber, Hans-Peter; Litzler, Alfred; Hertig, Jean; Milicevic, Branimir; Fuhring, Heinrich; Sieber, Johannes-Helmut; and 042818, to Ciba Limited and Bowe Bohler & Weber KG. Apparatus for the processing of textiles, fibers and the like. 3,783,650, Cl. 68-18.00.

Weber, John A., to General Motors Corporation. Anti-theft apparatus including turnover mode of operation. 3,784,839, Cl. 307-10.0at.

Weenen, Jacobus Hendricus Marinus: *See—*
Van Kampen, Daniel Marten; and Weenen, Jacobus Hendricus Marinus, 3,784,476.

Weiberg, Otto: *See—*
Kleemann, Axel; Schreyer, Gerd; Weiberg, Otto; and Weigert, Wolfgang, 3,784,568.

Weichselbaum, Theodore E., to Sherwood Medical Industries Inc. Universal parenteral fluid administration connector. 3,783,895, Cl. 137-588.000.

Weidemann, Erwin, to Siemens Aktiengesellschaft. Semiconductor assembly having semiconductor housing and contact discs disposed within a tube. 3,784,885, Cl. 317-234.00r.

Weigert, Wolfgang: *See—*
Kleemann, Axel; Schreyer, Gerd; Weiberg, Otto; and Weigert, Wolfgang, 3,784,568.

Weikert, Roy J. Container and closure therefor. 3,783,920, Cl. 150-8.000.

Weiner, James R.: *See—*
Eckert, John Presper, Jr.; Weiner, James R.; Shaw, Robert F.; and Weiss, Herbert Frazer, 3,784,983.

Weinert, Peter Hans: *See—*
Jaffe, Gerald Myer; Szkrybalo, William; and Weinert, Peter Hans, 3,784,408.

Weisbrod, Sherman: *See—*
Chang, Kern Ko Nan; Prager, Hans John; and Weisbrod, Sherman, 3,784,925.

Weiss, Francis: *See—*
Isard, Arsene; and Weiss, Francis, 3,784,567.

Weiss, Herbert Frazer: *See—*
Eckert, John Presper, Jr.; Weiner, James R.; Shaw, Robert F.; and Weiss, Herbert Frazer, 3,784,983.

Wellborn, James Larkin: *See—*
Driscoll, Gerald Jon; and Wellborn, James Larkin, 3,783,527.

Wells, James Rutherford: *See—*
Cunningham, Sinclair Upton; and Wells, James Rutherford, 3,783,749.

Wells, John B., to Xerox Corporation. Image density control. 3,784,294, Cl. 355-3.000.

Wells, Robert F. Telescoping tongue and brake assembly for trailers. 3,783,982, Cl. 188-112.000.

Welter, Leonard M.: *See—*
Coates, Vincent J.; and Welter, Leonard M., 3,784,815.

Wenglar, Frank G., to FMC Corporation. Butterfly valve stem seal energizer. 3,784,157, Cl. 25-306.000.

Wenzel, Magdalena: *See—*
Mund, Konrad; Richter, Gerhard; and Wenzel, Magdalena, 3,784,412.

Werlein, Eugene R.: *See—*
McGlothlin, Raymond E.; Werlein, Eugene R.; Taylor, Bruce F.; and Schultz, Roger Lee, 3,784,579.

Werner, Alan J., Jr.: *See—*
Vosteen, Robert E.; and Werner, Alan J., Jr., 3,784,930.

Werner, Frank D.: *See—*
Swanson, Paul A.; and Wiele, Robert W., 3,784,163.

Wernli, Max, to Fischer, Georg, Aktiengesellschaft. Tiltable foundry converter for treatment and storage of molten metal. 3,784,178, Cl. 266-38.000.

Wessner, Harald: *See—*
Schild, Josef; and Wessner, Harald, 3,783,761.

West, Benjamin W.; d/b/a California Controls Company: *See—*
Bilbrey, Robert A., 3,784,095.

Westerlund, Tage; and Hedman, Jarl, to Linden-Alimak AB. Hoist arrangement on ships. 3,784,032, Cl. 214-15.00r.

Western Electric Company, Incorporated: *See—*
Parikh, Girish D.; and Willard, William C., 3,784,455.
Wagner, Harry M., Jr., 3,783,486.

Westinghouse Electric Corporation: *See—*
Smith, James D. B., 3,784,583.
Turner, Abner B., 3,784,014.

Westmoreland Plastics Company: *See—*
Skinner, Harvey G., 3,783,907.

Westrich, James L., to Gleason Corporation. Hammock bed-supporting frames. 3,783,458, Cl. 5-129.000.

Westvaco Corporation: *See—*
De Ligt, John, 3,784,188.
Forbes, Hampton E., Jr., 3,784,086.

Weyerhaeuser Company: *See—*
Baxter, Gene F.; Freeman, Harlan G.; and Tiedeman, George T., 3,784,516.
Freeman, Harlan G.; Baxter, Gene F.; and Graham, George, 3,784,515.
Tiedeman, George T., 3,784,514.

Weygandt, Maurice E. Golf swing improving device. 3,784,208, Cl. 273-183.00a.

Whalen, Mark E.; and Malleck, Joseph W., to Republic Steel Corporation. Method of repetitively impacting small pieces of metal in order to produce a densified continuous body. 3,783,494, Cl. 29-403.000.

Whang, Jong Jai: *See—*
Dales, Mark; and Whang, Jong Jai, 3,784,489.
Fellmann, Robert P.; and Whang, Jong Jai, 3,784,532.

Wheelock, George L., to Goodrich, B. F., Company, The. Process for impregnating non-wovens with butadiene carboxyl polymer latices. 3,784,401, Cl. 117-62.200.

Whelan, James E., to General Motors Corporation. Piston air compressor for air assist shock absorber. 3,784,333, Cl. 417-383.000.

Whirlpool Corporation: *See—*
Karklys, Joseph, 3,783,651.
Whiteley Industries, Inc.: *See—*
Lewis, Ernest E., 3,784,123.
Whitfill, William A., Jr., to Schlumberger Technology Corporation. Method for pre-stressing armored well logging cable. 3,784,732, Cl. 174-108.000.
Whitley, Ernest M.; Beaman, Don L.; and McCombie, William S., to Redlake Corporation. Data recording camera. 3,783,763, Cl. .
Whittaker Corporation: *See—*
Kaufmann, Albert R., 3,784,656.
Whittaker, Ralph E., Jr.: *See—*
James, Dean B.; Smiley, Seymour H.; and Whittaker, Ralph E., Jr., 3,784,817.
Wicker, Ralph C., to American Bank Note Company, mesne. Method and apparatus for hiding and viewing halftone images. 3,784,289, Cl. 350-321.000.
Wiedijk, Piet, to U.S. Philips Corporation. Method of manufacturing an incandescent lamp. 3,784,275, Cl. 316-19.000.
Wiele, Robert W.: *See—*
Swanson, Paul A.; and Wiele, Robert W., 3,784,163.
Wilckens, Volkmar; and Schattenmann, Wolfram. Aircraft landing display apparatus. 3,784,969, Cl. 340-27.0na.
Wildwood Products, Inc.: *See—*
Phillips, David P., 3,784,160.
Wilfert, Karl; and Gotz, Hans, to Daimler-Benz Aktiengesellschaft. Device for reduction of soiling of motor vehicles. 3,784,226, Cl. 280-157.000.
Will, Gerhard, to Bosch, Robert, G.m.b.H. Kickdown arrangement for a hydraulic transmission. 3,783,713, Cl. 74-865.000.
Willard, Edwin J.; and Elmore, James, to Stanley Works, The. Apparatus for assembling a battern mounted package. 3,783,773, Cl. 100-7.000.
Willard, William C.: *See—*
Parikh, Girish D.; and Willard, William C., 3,784,455.
Willats, Donald James; and Morgan, Peter Ernest, to Courtaulds Limited. Method for making carbon filament tapes. 3,784,428, Cl. 156-174.000.
Williams, Albert E. Timer controlled feeder apparatus. 3,783,836, Cl. 119-51.140.
Williams, Beverly E. Treating skinned animal carcasses. 3,783,909, Cl. 139-426.000.
Williams, Bobby G.: *See—*
Shumate, Marvin T.; and Williams, Bobby G., 3,784,124.
Williams, Charles E., to Hough Manufacturing Corporation. Train operated folding partition. 3,783,930, Cl. 160-199.000.
Williams, John Gordon; and Griffiths, Peter John. Disc dispensing apparatus. 3,783,885, Cl. 133-5.000.
Williamson, Harold A.: *See—*
Sotak, John B.; and Williamson, Harold A., 3,783,591.
Willis, Arnold L.; and Wortman, Harold, to MSL Industries, Inc. Meterial guide members for a compressing and conveying apparatus. 3,783,578, Cl. 53-24.000.
Willmott, Kenneth Nash Knight: *See—*
Dobson, Christopher D.; and Willmott, Kenneth Nash Knight, 3,783,821.
Willoteaux, Guy Claude, to Societe Francaise d'Equipements pour la Navigation Aerienne Aerodrome de Villacoublay. Systems for surveying and correcting trajectories. 3,784,800, Cl. 235-150.270.
Willvonseder, Ernest. Shrink-film capping machine. 3,783,582, Cl. 53-67.000.
Wilson & Co., Inc.: *See—*
Pozorski, Roman L., 3,784,491.
Wilson, Clenis E.: *See—*
Chance, Glenn G.; Crews, Sam T.; and Wilson, Clenis E., 3,784,238.
Wilson, George A., to I-T-E Imperial Corporation. Racking mechanism for draw-out type miniature high voltage circuit breaker. 3,784,764, Cl. 200-50.0aa.
Wilson, George A., to I-T-E Imperial Corporation. Vacuum circuit breaker current transfer and actuation. 3,784,774, Cl. 200-144.00b.
Windmoller & Holscher: *See—*
Winnemoller, Aloys, 3,783,751.
Winkler, Alfred; Pelte, Richard; Huber, Theodor; and Mayr, Helmut, to Agfa-Gevaert Aktiengesellschaft. Battery test arrangement in a motion picture camera. 3,784,292, Cl. 352-170.000.
Winkler, Heinz: *See—*
Bergmeister, Eduard; Kirst, Paul-Gerhard; and Winkler, Heinz, 3,784,648.
Winnemoller, Aloys, to Windmoller & Holscher. Methods and apparatus for making sacks or bags. 3,783,751, Cl. 93-35.00r.
Winshel, Alan W. Circumcision surgical tool. 3,783,875, Cl. 128-318.000.
Wisherd, David S., to Motorola, Inc. Parallel transmission line matching network for connecting together a plurality of R.F. amplifier transistors. 3,784,932, Cl. 333-9.000.
Wissbrun, Kurt Falke: *See—*
Schaul, Jerome Sandel; Wissbrun, Kurt Falke; and Hannon, Martin John, 3,784,661.
Wissinger, Waldemar; Kurth, Josef; and Gauchel, Peter, to Dynamit Nobel Aktiengesellschaft. Apparatus for the extrusion of hollow articles. 3,784,345, Cl. 425-325.000.
Wisz, Edward, to Buss A.G. and Eisenbau Wghlen AG. Method and apparatus for carrying out a heat exchange between a heat carrier medium and a drum reactor. 3,783,936, Cl. 165-90.000.
Witkowski, Henry J. Knob for electronic control shaft. 3,783,708, Cl. 74-553.000.
Woell, Fred T., Jr., to Jacuzzi Bros. Incorporated. Pump impellers. 3,784,321, Cl. 416-223.000.
Wolfe, Denis G.; and Tyler, Hugh J., to Robertshaw Controls Company. Electric ignition system. 3,784,351, Cl. 431-66.000.
Wolff, Ivan A.; and Stringfellow, Arthur G., to United States of America, Agriculture. Protein-enriched whey fractions. 3,784,114, Cl. 241-24.000.
Wolfgang, Swodenk; Gerhard, Scharfe; and Grolig, Johann. Process for the production of allyl esters. 3,784,578, Cl. 260-410.09n.
Wolford, Lionel T.: *See—*
Dotson, Anderson O., Jr.; Newcombe, Jack; and Wolford, Lionel T., 3,784,509.
Wollam, John S. Apparatus for use in deposition of films from a vapor phase. 3,783,822, Cl. 118-49.100.
Woodall, Leslie. Golf ball retriever. 3,784,037, Cl. 214-356.000.
Woodhall, Edwin S.; Appleby, Paul E.; and Touchette, John W., to Goodyear Tire & Rubber Company, The. Method of building tires. 3,784,426, Cl. 156-132.000.
Woods, Norman. Room air conditioner. 3,783,637, Cl. 62-427.000.
Woodward, Gary F.: *See—*
Burgett, James F.; Vanderberg, Lawrence J.; and Woodward, Gary F., 3,784,973.
Woolf, Cyril: *See—*
Oxenrider, Bryce C.; Beyleveld, Wilhelmus M.; and Woolf, Cyril, 3,784,644.
Woolf, Julius Isadore; Sadowy, Roman, Jr.; and Gershman, Russell John, to Information Flow Incorporated; in care of Ocean & Atmospheric Science, Inc. Limited access dialing system. 3,784,757, Cl. 179-18.0da.
Woom, James T.: *See—*
Davis, John P.; Harmon, Robert W.; and Woom, James T., 3,784,729.
Worrall, Ashton L., Jr. Utility trailer. 3,784,230, Cl. 280-491.000.
Wortman, Harold: *See—*
Willis, Arnold L.; and Wortman, Harold, 3,783,578.
Wright, Carl J.: *See—*
Miller, James L.; Wright, Carl J.; and Harrold, Marshall C., 3,783,529.
Wright, Raymond Grenville Whitehead, to Textron, Inc. Air cushion vehicle seal system. 3,783,965, Cl. 180-128.000.
Wuerker, Ralph F.; and Heflinger, Leo O., to TRW Inc. Holographic apparatus for large field of view. 3,784,276, Cl. 350-3.500.
Wuest, Toni, to Meyer, Roth & Pastor, Maschienefabrik GmbH. Method and apparatus for removing the burr of chain-links. 3,783,609, Cl. 59-35.000.
Wulff, Peter: *See—*
Schwierz, Gunter; and Wulff, Peter, 3,784,830.
Wurzburger, Paul D. Plug valve with storage compartment. 3,783,890, Cl. 137-315.000.
Wyman, Dennis G.; Bichell, William J.; and Oliveri, Humber, to Granta Corporation. Rotatably scoring dart board. 3,784,201, Cl. 273-102.10e.
Xerox Corporation: *See—*
Hudson, Frederick W.; and Cranch, John F., 3,784,300.
Manghirmalani, Arjan T., 3,784,299.
Sato, Masamichi, 3,784,301.
Sato, Masamichi; and Fukushima, Osamu, 3,784,397.
Sullivan, William A., Jr.; and Griswold, Augustus W., 3,784,303.
Swanberg, Melvin E., 3,784,812.
Urbanek, Edwin A.; and Vock, Richard C., 3,783,826.
Wells, John B., 3,784,294.
Zucker, Edwin, 3,784,302.
Yabu, Toshiomi: *See—*
Nagahiro, Michinori; Yabu, Toshiomi; Hosono, Hiroo; and Ushihara, Masaharu, 3,784,128.
Yale, Harry L.; and Petigara, Ramesh, to Squibb, E. R., & Sons, Inc. 3-Piperazinyl-quinobenzoxa (or thia) zepine derivatives. 3,784,548, Cl. 260-268.0pc.
Yale, Harry L.; and Petigara, Ramesh B., to Squibb, E. R., & Sons, Inc. N-[2,3-dihydroquinobenzoxazepin-3-ylidene]-O-(substituted carbamoyl) hydroxylamines. 3,784,549, Cl. 260-287.00r.
Yale, Harry L.; and Petigara, Ramesh B., to Squibb, E. R., & Sons, Inc. N-[2,3-dihydroquinobenzoxa(or thia) zedin-3-ylidene]-O-substituted benzoyl) hydroxylamines. 3,784,550, Cl. 260-287.00r.
Yamada, Shigeki; Miyazawa, Kokichi; Naka, Hideaki; and Yoshida, Yoshio, to Ishihara Sangyo Kaisha, Ltd. Titanium dioxide concentrate and its manufacturing process. 3,784,670, Cl. 423-80.000.
Yamada, Takayasu: *See—*
Takahashi, Shogo; Yamada, Takayasu; and Okudaira, Hiromi, 3,784,366.
Yamada, Tetsuya: *See—*
Hino, Horoyuki; Asakuno, Hiroyoshi; and Yamada, Tetsuya, 3,784,662.
Yamada, Yoichiro: *See—*
Shigeyama, Shogo; Yamada, Yoichiro; and Kondo, Kunihiro, 3,784,749.
Yamaguchi, Masami: *See—*
Shiio, Hajime; and Yamaguchi, Masami, 3,784,407.
Yamaguchi, Masaru: *See—*
Ito, Yoshio; Katayama, Hajime; Nitanda, Hiroshi; and Yamaguchi, Masaru, 3,784,297.

Yamamoto, Katsuo; Sato, Hideo; Iwasa, Toshio; Nakamura, Hisao; and Adachi, Katsuhiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Apparatus for continuously treating fibrous materials under pressure. 3,783,649, Cl. 68-5.00e.

Yamamoto, Masao: *See—*
Nishida, Hiroshi; Yamamoto, Masao; Kitai, Atsuo; Ozaki, Asaichiro; Nishimura, Yokio; Takemi, Hiroto; and Takemi, Chimo, 3,784,446.

Yamamura, Sakae: *See—*
Inaba, Seiuemon; Ikebe, Yo; and Yamamura, Sakae, 3,784,850.

Yamane, Masako: *See—*
Mizutani, Yukio; Sata, Toshikatsu; Izuo, Ryuji; and Yamane, Reiichi, 3,784,457.

Yamane, Reiichi: *See—*
Mizutani, Yukio; Sata, Toshikatsu; Izuo, Ryuji; and Yamane, Reiichi, 3,784,457.

Yamano, Togo; Jono, Kumiko; Sato, Shigehiko; and Nakanishi, Michio, to Takeda Chemical Industries, Ltd. and Method Industries, Ltd. A method for inhibiting microbial growth employing 2,6-dihydroxy-3,5-di-tert-butyl benzoic acid. 3,784,699, Cl. 424-317.000.

Yamaoto, Toshihiko: *See—*
Iwama, Masakuni; Fujiwara, Mitsuto; Kojima, Tamotsu; and Yamaoto, Toshihiko, 3,784,383.

Yamazaki, Eiich: *See—*
Takemoto, Takeo; Yamazaki, Eiich; Maruyama, Koichi; and Ueda, Toshio, 3,783,754.

Yamazaki, Eiichi; Maruyama, Koichi; and Ueda, Toshio, to Hitachi, Ltd. Correcting lens used to form fluorescent screens of colour television receiving tubes. 3,784,282, Cl. 350-175.00r.

Yanagisawa, Yuzuru: *See—*
Araki, Yoshitoshi; Yanagisawa, Yuzuru; and Nakayama, Akira, 3,784,862.

Yananton, Patrick Michael: *See—*
Cekoric, Thomas, Jr.; and Yananton, Patrick Michael, 3,784,448.

Yang, Eugene Li-Chun. Non-regular four blade shutter. 3,784,293, Cl. 352-208.000.

Yard, John S.: *See—*
Mannherz, Elmer D.; Riester, Hubert A.; Schmoock, Roy F.; and Yard, John S., 3,783,687.

Yasuda, Tetuya, to Citizen Watch Co., Ltd. Wrist watch having a push-button. 3,783,605, Cl. 58-74.000.

Yasun, Kazuomi: *See—*
Kume, Toyohiko; and Yasun, Kazuomi, 3,784,654.

Yata, Kotaro: *See—*
Tsujimoto, Kayoshi; Yata, Kotaro; and Matsuda, Motonobu, 3,783,758.

Yocum, Norman E.; and Mc Intyre, Frank H., Jr., to Superior Industries, Inc. Door frame assembly. 3,783,559, Cl. 49-504.000.

Yokoyama, Yoshiaki: *See—*
Ogawa, Kiyoshi; Yokoyama, Yoshiaki; and Fukushima, Yoshio, 3,783,706.

Yoshida, Yoshio: *See—*
Yamada, Shigeki; Miyazawa, Kokichi; Naka, Hideaki; and Yoshida, Yoshio, 3,784,670.

Yoshino, Takachika; Saito, Shigeru; Sobukawa, Masukuni; Nagase, Isao; Niikura, Masao; Ishikura, Jun; and Sasaki, Yutaka, to Nitto Chemical Industry Co., Ltd. Process for the production of methylacrylonitrile. 3,784,560, Cl. 260-465.300.

Yoshitomi Pharmaceutical Industries, Ltd.: *See—*
Nakanishi, Michio; Arimura, Katsuo; and Ao, Hideki, 3,784,551.

Yosioka, Satosi; Tokunaga, Sinobu; Tamenori, Tomoyoshi; Tamura, Sigeru; and Wada, Morio, to Nippon Kayaku Co., Ltd. Yellow sulfur dyes. 3,784,534, Cl. 260-128.000.

Young, Jerry W., to Iowa State University Research Foundation, Inc. Treatment and control of milk fat depression in lactating cows. 3,784,707, Cl. 424-343.000.

Youngblood, Douglas J.: *See—*
Reynolds, David L.; Youngblood, Douglas J.; Bunn, Dorrance P., Jr.; and Pratt, Roy E., 3,784,463.

Youngquist, John A.: *See—*
Bergum, Bernard C.; and Youngquist, John A., 3,784,410.

Yuken Kogyo Limited: *See—*
Niwa, Hideo, 3,784,882.

Zakharov, Sergei Alexandrovich: *See—*
Kusovsky, Boris Isaakovich; Pavlov, Nikolai Ivanovich; Mattichenko, Anatoly Petrovich; Zakharov, Sergei Alexandrovich; and Kirilin, Anatoly Fedorovich, 3,784,461.

Zamotin, Radvinon I. Safety pin. 3,783,475, Cl. 24-158.00s.

Zampetti, Patrick L.: *See—*
McGeary, Frank L.; and Zampetti, Patrick L., 3,783,471.

Zander, Walter: *See—*
Groos, Horst Hans; and Zander, Walter, 3,783,774.

Zeiders, Glenn W., Jr.; and Bella, Richard A., to Avco Corporation. High power laser energy measuring device. 3,783,685, Cl. 73-190.00r.

Zeidman, Gordon G.: *See—*
Avery, R. Stanton; Scharenberg, Robert T.; and Zeidman, Gordon G., 3,784,076.

Zelenka, Donald J., to General Motors Corporation. Temperature responsive switch. 3,784,947, Cl. 337-320.000.

Zelina, William B., to General Systems, Inc. Battery charging system for emergency battery systems. 3,784,892, Cl. 320-40.000.

Zellweger AG: *See—*
Forgo, Gabor; Meyer, Erwin; and Schilter, Josef, 3,783,828.

Zglobicki, Edward: *See—*
Prajsnar, Tadeusz; Rulinski, Jozef; Zglobicki, Edward; and Sojka, Bronislaw, 3,783,663.

Zielinski, Richard J.: *See—*
Oszlanyi, Anial G.; and Zielinski, Richard J., 3,784,709.

Zilken, Hans-Joachim: *See—*
Messner, Rudolf; and Zilken, Hans-Joachim, 3,783,882.

Zimmerman, Stanley D.; and McCoy, Paul O., to Cities Service Company. Processing of rubber. 3,784,531, Cl. 260-85.30h.

Zirimis, Demosthenes. Musical instrument. 3,783,733, Cl. 84-402.000.

Zirps, Wilhelm, to Bosch, Robert, G.m.b.H. Pressure container tube connection. 3,784,237, Cl. 285-208.000.

Zola, Meyer Joseph, to Bell Telephone Laboratories, Incorporated. Self-checking decoder. 3,784,978, Cl. 340-146.1ab.

Zoroglu, Demir S., to Motorola, Inc. Low parasitic microwave package. 3,784,884, Cl. 317-234.00r.

Zovko, Carl T. Thrust augmenting expansion engine. 3,783,814, Cl. 114-20.00a.

Zucker, Edwin, to Xerox Corporation. Electrophoretic imaging apparatus including application of dynamic stress on the particle suspension. 3,784,302, Cl. 355-10.000.

Zuest, Armin: *See—*
Schindler, Walter; Schmid, Erich; and Zuest, Armin, 3,784,689.

Zufferey, Daniel: *See—*
Grimm, Hans-Ueli; Zufferey, Daniel; and Messina, Antonio, 3,784,954.

Zwack, Robert R.: *See—*
LeBras, Louis R.; and Zwack, Robert R., 3,784,460.

Zweifel, Fritz, 20% to Lee, Raymond, Organization, Inc., The. Hydrogen heating system. 3,784,096, Cl. 237-1.00r.

Zywietz, Walter: *See—*
Gantre, Franz; Zywietz, Walter; Seiz, Rudolf; and Eickhoff, Heinz, 3,783,625.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF JANUARY, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AAA Pipe Cleaning Corp.: *See*—
Fisco, Benjamin P., Jr. Re. 27,874.
AB Ahlen & Akerlund Forpackning: *See*—
Persson, Karl R. Re. 27,870.
Adler, Fred: *See*—
Welsh, James W., and Adler. Re. 27,877.
Collins, Neil E., and I. E. Halt, to General Electric Co. Ohmic contact for Group III–V P-type semiconductors. Re. 27,879, 1–8–74, Cl. 317—234 R.
Emerson, William C.: *See*—
Hudson, Frederick W., and Emerson. Re. 27,876.
Esty, Joseph J. assignor of a fractional part interest to Oberlin J. Evenson, Carton. Re. 27,872, 1–8–74, Cl. 229—14 B.
Evenson, Oberlin J.: *See*
Esty, Joseph J. Re. 27,872.
Fisco, Benjamin P., Jr., to AAA Pipe Cleaning Corp. Shroud for sewer cleaning truck. Re. 27,874, 1–8–74, Cl. 137—340.
Gallagher, John P., R. M. Meyers, E. H. Song, and C. M. Willitis, to Thiokol Chemical Corp. Liquid polysulfide polymeric glass-to-metal sealant composition. Re. 27,880, 1–8–74, Cl. 260—33.80 R.
General Electric Co.: *See*—
Collins, Neil E., and Halt. Re. 27,879.
Halasa, Adel F.: *See*—
Sommers, Gary L., and Halasa. Re. 27,878.
Halt, Ira E.: *See*—
Collins, Neil E., and Halt. Re. 27,879.
Hudson, Frederick W., and W. C. Emerson, to Xerox Corp. Dispensing apparatus. Re. 27,876, 1–8–74, Cl. 222—181.
Lummus Co., The: *See*—
O'Connor, Ward F. Re. 27,871.
Meyers, Robert M.: *See*—
Gallagher, John P., Meyers, Song, and Willitis. Re. 27,880.
O'Connor, Ward F., to The Lummus Co. Position control systems for an article handling apparatus. Re. 27,871, 1–8–74, Cl. 214—16.40 A.
Persson, Karl R., to AB Ahlen & Akerlund Forpackning. Foldable blanks and cartons, boxes, trays or packing cases made therefrom. Re. 27,870, 1–8–74, Cl. 229—39 R.
Prince Mfg. Co.: *See*—
Weits, Ferdinand, and Zwiep. Re. 27,873.
Sommers, Gary L., and A. F. Halasa. Process. Re. 27,878, 1–8–74, Cl. 260—94.20 T.
Song, Earl H.: *See*—
Gallagher, John P., Meyers, Song, and Willitis. Re. 27,880.
Standard Motor Products, Inc.: *See*—
Welsh, James W., and Adler. Re. 27,877.
Swift, Gilbert. Method and apparatus for determining deflection of a structure. Re. 27,875, 1–8–74, Cl. 73—67.1.
Thiokol Chemical Corp.: *See*—
Gallagher, John P., Meyers, Song, and Willitis. Re. 27,880.
Weits, Ferdinand, and T. C. Zwiep, to Prince Mfg. Co. Debonding apparatus. Re. 27,873, 1–8–74, Cl. 17—1 G.
Welsh, James W., and F. Adler, to Standard Motor Products, Inc. Heating device for electrical actuation. Re. 27,877, 1–8–74, Cl. 219—536.
Willitis, Clark M.: *See*—
Gallagher, John P., Meyers, Song, and Willitis. Re. 27,880.
Xerox Corp.: *See*—
Hudson, Frederick W., and Emerson. Re. 27,876.
Zwiep, Theodore C.: *See*—
Weits, Ferdinand, and Zwiep. Re. 27,873.

LIST OF PLANT PATENTEES

Ball, Geo. J.: *See*—
Fischer, Arnold W. 3,426.
Fischer, Arnold W. 3,427.
Fischer, Arnold W. 3,428.
Fischer, Arnold W. 3,429.
Duffett, William E.: *See*—
Jessel, Walter H., Jr., and Duffett. 3,424.
Fischer, Arnold W., to Geo. J. Ball. African violet plant. 3,426, 1–8–74, Cl. 69.
Fischer, Arnold W., to Geo. J. Ball. African violet plant. 3,427, 1–8–74, Cl. 69.
Fischer, Arnold W., to Geo. J. Ball. African violet plant. 3,428, 1–8–74, Cl. 69.
Fischer, Arnold W., to Geo. J. Ball. African violet plant. 3,429, 1–8–74, Cl. 69.
Frampton's Nurseries Ltd.: *See*—
Machin, Barrie J. 3,425.
Graust, Bent E. Carnation plant. 3,430, 1–8–74, Cl. 73.
Jackson & Perkins Co.: *See*—
Warriner, William A. 3,423.
Warriner, William A. 3,431.
Warriner, William A. 3,432.
Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,424, 1–8–74, Cl. 78.
Machin, Barrie J., to Frampton's Nurseries Ltd. Chrysanthemum plant. 3,425, 1–8–74, Cl. 74.
Warriner, William A., to Jackson & Perkins Co. Rose plant. 3,423, 1–8–74, Cl. 18.
Warriner, William A., to Jackson & Perkins Co. Rose plant. 3,431, 1–8–74, Cl. 11.
Warriner, William A., to Jackson & Perkins Co. Rose plant. 3,432, 1–8–74, Cl. 14.
Yoder Brothers, Inc.: *See*—
Jessel, Walter H., Jr., and Duffett. 3,424.

LIST OF DESIGN PATENTEES

Accutec, Inc.: *See*—
Bajusz, Harold F. 229,854.
Adrema Pitney-Bowes GmbH: *See*—
Schmeck, Robert E. 229,865.
Arnold, Leo G., Jr. Airfoil cabinet for a truck. 229,829, 1–8–74, Cl. D14—6.
Ashley, E. H., & Co.: *See*—
Glaser, Walter H. 229,849.
Bajusz, Harold F., to Accutec, Inc. Flashlight. 229,854, 1–8–74, Cl. D48—24.
Bally Mfg. Corp.: *See*—
Lally, Joseph E., and Reedy. 229,842.
Beam Furniture, Inc.: *See*—
Lindvall, Roy B. 229,801.
Lindvall, Roy B. 229,802.
Lindvall, Roy B. 229,803.
Beam, Norman A., to McGraw-Edison Co. Built-in electric toaster. 229,817, 1–8–74, Cl. D7—93.
Becker, Sidney, to Stanton Magnetics, Inc. Stereophonic head set. 229,833, 1–8–74, Cl. D26—14.
Bell Telephone Laboratories, Inc.: *See*—
Genaro, Donald M., and McGarvey. 229,837.
Berner, John M.: *See*—
Mittelstadt, Robert A., and Berner. 229,848.
Best Quality Plastics, Inc.: *See*—
Erickson, Herbert R. 229,824.
Born, John H. Scafford bracket. 229,822, 1–8–74, Cl. D8—236.
Bourhenne, Francis K. Coiled wire dispenser. 229,821, 1–8–74, Cl. D8—220.
Brunswick Corp., The: *See*—
Crossman, Phillip E. 229,841.
Carroll, John W., to Digital Equipment Corp. Digital computer. 229,830, 1–8–74, Cl. D26—5.
Cassibo, Vernon E.: *See*—
Klemp, Eldon J., and Cassibo. 229,818.
Christie, Cornelius W.: *See*—
Culbertson, Richard, and Christie. 229,859.
Concept, Inc.: *See*—
Staub, David E. 229,869.
Corning Glass Works: *See*—
Popovich, Keith D. 229,814.

Crossman, Phillip E., to The Brunswick Corp. Billiard table top. 229,841, 1–8–74, Cl. D34—3.
Culbertson, Richard, and C. W. Christie, to General Electric Co. Multi-band portable radio. 229,859, 1–8–74, Cl. D56—4.
Czarny, Jane M. Portable hanger for lady's purse. 229,870, 1–8–74, Cl. D87—2.
Dahl, Forrest H. Teleprinter. 229,835, 1–8–74, Cl. D26—14.
Davis, Paul, to Sweetheart Plastics, Inc. Disposable plastic dish. 229,812, 1–8–74, Cl. D7—1.
Day, William H., to W. R. Grace, & Co. Container for bakery products. 229,823, 1–8–74, Cl. D9—183.
Digital Equipment Corp.: *See*—
Carroll, John W. 229,830.
Dunlop Holdings Ltd.: *See*—
Hart, Claude A., and Haycock. 229,827.
Dymo Industries, Inc.: *See*—
Graybeal, Andrew. 229,863.
Eastman Kodak Co.: *See*—
Hansen, David E. 229,862.
Eckstein, Roman A., 50% to Jerome J. Fischer. Necktie. 229,796. 1–8–74. Cl. D2—343.
Edmission, Russell C., LC J. Kingsbury, and G. Soulakis, to Mattel, Inc. Toy roadway section. 229,847, 1–8–74, Cl. D34—15.
Erickson, Herbert R., to Best Quality Plastics, Inc. Base for a container. 229,824, 1–8–74, Cl. D9—219.
Finkel, Edward, to JFD Electronics Corp. Antenna housing. 229,832, 1–8–74, Cl. D26—14.
50% to Fischer, Jerome J.: *See*—
Eckstein, Roman A. 229,796.
Fleenor, Charles: *See*—
Schlesinger, Irving, and Fleenor. 229,839.
Frick, Berndt E. Cabinet for teleprinter or the like. 229,864, 1–8–74, Cl. D64—11.
GTE Automatic Electric Laboratories, Inc.: *See*—
Wollet, William M. 229,856.
Genaro, Donald M., and J. N. McGarvey, to Bell Telephone Laboratories, Inc. Telephone handset. 229,837, 1–8–74, Cl. D26—14.
General Electric Co.: *See*—
Culbertson, Richard, and Christie. 229,859.
Glaberson, Martin, to Warner-Lambert Co. Safety razor. 229,875, 1–8–74, Cl. D95—3.
Glaberson, Martin, to Warner-Lambert Co. Safety razor. 229,876, 1–8–74, Cl. D95—3.
Glaser, Walter H., to E. H. Ashley, & Co. Expandable gem setting. 229,849, 1–8–74, Cl. D45—1.
Goans, Leroy, Golf teaching aid. 229,843, 1–8–74. Cl. D34—5.
Goto, Kenjiro, to Mansei Kogyo Kabushiki Kaishya. Gas lighter. 229,855, 1–8–74, Cl. D48—27.
Grace, W. R., & Co.: *See*—
Day, William H. 229,823.
Graybeal, Andrew, to Dymo Industries, Inc. Tape embossing tool. 229,863, 1–8–74, Cl. D64—10.
Greenberg, Donald E. Display tray. 229,807, 1–8–74, Cl. D6—132.
Haaser, Walter L. Ski rack or similar article. 229,806, 1–8–74, Cl. D6—125.
Hall, Richard B., to Sunbeam Corp. Hand'ed support stand for a cooking vessel. 229,819, 1–8–74. Cl. D7—130.
Hansen, David E., to Eastman Kodak Co. Still camera or the like. 229,862, 1–8–74, Cl. D61—1.
Hart, Claude A., and E. W. Haycock, to Dunlop Holdings Ltd. Tire. 229,827, 1–8–74, Cl. D12—152.
Hassinger, Herman A. Chair. 229,804, 1–8–74, Cl. D6—78.
Haycock, Eric W.: *See*—
Hart, Claude A., and Haycock. 229,827.
Hayes, Thomas H., to VCA Corp. Actuator cap for a pressurized container. 229,825, 1–8–74, Cl. D9—258.
Hinkley, William J. Portable chemical toilet. 229,828, 1–8–74, Cl. D13—1.
Howard, Jerry E. Chair. 229,798, 1–8–74, Cl. D6—26.
JFD Electronics Corp.: *See*—
Finkel, Edward. 229,832.
Jambretz, Stephen J.: *See*—
Wynveen, Larry N. 229,816.
James, Curtis G. Tissue roll holder. 229,805, 1–8–74, Cl. D6—97.
Johnson, Boyd R. Combined framed aquarium and cover therefor. 229,838, 1–8–74, Cl. D30—8.
Johnson, Boyd R. Combined framed aquarium and cover therefor. 229,840, 1–8–74, Cl. D30—12.
Jones, Joseph J. Rocking exercise stool. 229,800, 1–8–74, Cl. D6—32.
Kingsbury, L. C. J.: *See*—
Edmission, Russell C., Kingsbury, and Soulakis. 229,847.
Klemp, Eldon J., and V. E. Cassibo, to Litton Systems, Inc. Microwave oven. 229,818, 1–8–74, Cl. D7—128.
Lally, Joseph E., and T. A. Reedy, Jr., to Bally Mfg. Corp. Cabinet for a coin-controlled amusement machine. 229,842, 1–8–74, Cl. D34—5.
Laughton & Sons Ltd.: *See*—
Laughton, Malcolm. 229,811.
Laughton, Malcolm, to Laughton & Sons Ltd. Clothes hanger. 229,811, 1–8–74, Cl. D6—252.
Liberty Foundry Co.: *See*—
Mellow, Richard W., Jr. 229,820.
Lindblad, Frederick W. Candlestick. 229,851, 1–8–74, Cl. D48—2.
Lindblad, Frederick W. Candlestick. 229,852, 1–8–74, Cl. D48—2.
Lindvall, Roy B., to Beam Furniture, Inc. Bar stool. 229,801, 1–8–74, Cl. D6—47.
Lindvall, Roy B., to Beam Furniture, Inc. Chair. 229,802, 1–8–74, Cl. D6—47.
Lindvall, Roy B., to Beam Furniture, Inc. Bench. 229,803, 1–8–74, Cl. D6—60.
Litton Systems, Inc.: *See*—
Klemp, Eldon J., and Cassibo. 229,818.
Loertz, Albert F. Pendant or the like. 229,850, 1–8–74, Cl. D45—15.
Mansei Kogyo Kabushiki Kaisha: *See*—
Goto, Kenjiro. 229,855.
Marr, Arthur. Water pump baffle. 229,866, 1–8–74, Cl. D65—1.
Mattel, Inc.: *See*—
Edmission, Russell C., Kingsbury, and Soulakis. 229,847.
Max-Trac Tire Co., Inc.: *See*—
McMannis, Eugene E. 229,873.
McDonald, Ronald J. Table or the like. 229,808, 1–8–74, Cl. D6—177.
McGarvey, John N.: *See*—
Genaro, Donald M., and McGarvey. 229,837.
McGraw-Edison Co.: *See*—
Beam, Norman A. 229,817.
McMannis, Eugene E., to Mac-Trac Tire Co., Inc. Tire. 229,873, 1–8–74, Cl. D90—20.
Mellow, Richard W., Jr., to Liberty Foundry Co. Fireplace grate. 229,820, 1–8–74, Cl. D7—207.
Mende, Jerome. Eyeglass holder. 229,861, 1–8–74, Cl. D57—1.
Mittelstadt, Robert A., and J. M. Berner, to Toro Mfg. Corp. Snow auger, 229,848, 1–8–74, Cl. D35—2.
Motorola, Inc.: *See*—
Taylor, Terrance N. 229,834.
Murray Ohio Mfg. Co., The: *See*—
Schreckengost, Viktor. 229,845.
Necchi S.p.A.: *See*—
Zanuso, Marco, and Sapper. 229,868.
O'Neil, Robert A., and M. C. Wilson, to The Seeburg Corp. of Delaware. Phonograph cabinet. 229,860, 1–8–74, Cl. D56—4.
Patasnik, Sam. Hanger for neckties or the like. 229,797, 1–8–74, Cl. D6—251.
Pavelle, Richard. Golf club head. 229,844, 1–8–74, Cl. D34—5.
Popovich, Keith D., to Corning Glass Works. Plate or the like. 229,814, 1–8–74, Cl. D7—36.
Quenot, Michel, to Stanley Mabo. Tape measure. 229,856, 1–8–74, Cl. D52—1.
Rae, Donald A., and M. B. Toy ark. 229,846, 1–8–74, Cl. D34—15.
Rae, Madalene B.: *See*—
Rae, Donald A., and M. B. 229,846.
Raptis, George M. Pouring spout. 229,826, 1–8–74, Cl. D9—277.
Reedy, Terrence A., Jr.: *See*—
Lally, Joseph E., and Reedy. 229,842.
Robinson, Allen. Beverage tray. 229,813, 1–8–74, Cl. D7—21.
Santinelli, Joseph. Spectacle frame calibrator. 229,858, 1–8–74, Cl. 52—6.
Sapper, Richard: *See*—
Zanuso, Marco, and Sapper. 229,868.
Scharf, Seev. Baby bunting. 229,874, 1–8–74. Cl. D92—2.
Schlesinger, Irving, and C. Fleenor, to South Bay Treasure, Inc., d.b.a. Treasure Industries. Aquarium. 229,839, 1–8–74, Cl. D30—9.
Schmeck, Robert E., to Adrema Pitney-Bowes GmbH. Electric printing machine or similar article. 229,865, 1–8–74, Cl. D64—11.
Schreckengost, Viktor, to The Murray Ohio Mfg. Co. Wheel for a juvenile vehicle. 229,845, 1–8–74, Cl. D34—15.
Sears, Roebuck and Co.: *See*—
Shanks, Harry R. 229,867.
Seeburg Corp. of Delaware, The: *See*—
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Tower Housewares Ltd.: *See*—
Smith, Brian S. 229,815.
VCA Corp.: *See*—
Hayes, Thomas H. 229,825.
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ISSUED JANUARY 8, 1974

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CLASS 2
2.5 3,783,449
3R 3,783,450
4 3,783,451
6 3,783,452

CLASS 3
1 3,783,453
3,783,454

CLASS 4
3,783,455
149 3,783,456
255 3,783,457

CLASS 5
129 3,783,458
259B 3,783,459

CLASS 6
10 3,783,460

CLASS 8
175 3,784,355
196 3,784,356

CLASS 9
1R 3,783,461

CLASS 10
27H 3,783,462

CLASS 12
17R 3,783,463
142T 3,783,464

CLASS 15
21E 3,783,465
3,783,466
105 3,783,467
202 3,783,468
209R 3,783,469
210R 3,783,470
215 3,783,471
314 3,783,472
322 3,783,473
369 3,783,474

CLASS 17
1G Re.27,873

CLASS 21
61 3,784,357

CLASS 23
253PC 3,784,359
288S 3,784,360
289 3,784,361

CLASS 24
158S 3,783,475
205.16C 3,783,476
213CS 3,783,477

CLASS 26
253TP 3,784,358

CLASS 28
2 3,783,478
72.2R 3,783,479

CLASS 29
25.42 3,783,480
116AD 3,783,481
148.4A 3,783,482
156.8FC 3,783,483
159.1 3,783,484
201 3,783,485
203B 3,783,488
203D 3,783,487
3,783,490
203P 3,783,486
3,783,489
212R 3,783,491
278 3,783,492
400 3,783,493
403 3,783,494
426 3,783,495
460 3,783,497
464 3,783,496
471.3 3,783,498
574 3,783,499
577 3,783,500
597 3,783,501
598 3,783,502
599 3,783,503
603 3,783,504
609 3,783,505
623 3,783,506

CLASS 30
32R 3,783,510
40.1 3,783,507
41 3,783,511
43.92 3,783,508
161 3,783,509
254 3,783,512
273 3,783,513

CLASS 32
2 3,783,514
28 3,783,515

CLASS 33
1SD 3,783,516
17A 3,783,517
75R 3,783,518
77 3,783,519
180R 3,783,520
181AT 3,783,521
181R 3,783,522
203.13 3,783,523
285 3,783,524
379 3,783,525

CLASS 34
12 3,783,526
45 3,783,529
56 3,783,527
57A 3,783,528

CLASS 35
8B 3,784,719
11 3,783,530
12N 3,784,720
35B 3,783,531

CLASS 36
2.5AA 3,783,532
72R 3,783,534

CLASS 37
55 3,783,535
3,783,536
94 3,783,537

CLASS 38
97 3,783,538

CLASS 40
28C 3,783,539
78.07 3,783,540
121 3,783,541
132R 3,783,542
152 3,783,543
152.2 3,783,544

CLASS 42
61 3,783,545

CLASS 43
17.2 3,783,546
21.2 3,783,547
3,783,548
42.4 3,783,549

CLASS 44
62 3,784,362

CLASS 46
45 3,783,550
90 3,783,551
92 3,783,552
116 3,783,553
3,783,554

CLASS 47
38 3,783,555

CLASS 48
215 3,784,364

CLASS 49
25 3,783,556
49 3,783,558
221 3,783,557
504 3,783,559

CLASS 51
5 3,783,560
134.5R 3,783,561
298 3,784,365

CLASS 52
11 3,783,563
69 3,783,562
96 3,783,564
127 3,783,565
232 3,783,566
3,783,567
400 3,783,568
480 3,783,569
520 3,783,570
575 3,783,571
599 3,783,572
646 3,783,573
687 3,783,574

CLASS 53
3 3,783,575
7 3,783,576
24 3,783,577
3,783,578
3,783,579
29 3,783,580
37 3,783,581
67 3,783,582
138A 3,783,583
160 3,783,584
198A 3,783,585
213 3,783,586
247 3,783,587

CLASS 55
126 3,783,588
146 3,783,589
310 3,783,590

CLASS 56
6 3,783,533
10.2 3,783,591
13.3 3,783,592
14.4 3,783,593
15.8 3,783,594
331 3,783,595

CLASS 57
58.52 3,783,597
157F 3,783,596

CLASS 58
2 3,783,598
16.5 3,783,599
28B 3,783,600
30 3,783,601
50R 3,783,602
3,783,603
3,783,604
74 3,783,605
3,783,606
90B 3,783,607
116R 3,783,608

CLASS 59
35 3,783,609

CLASS 60
16 3,783,610
19 3,783,611
24 3,783,612
38 3,783,613
39.18R 3,783,614
39.61 3,783,615
204 3,783,616
218 3,783,617
226R 3,783,618
288 3,783,619
547 3,783,620

CLASS 61
1F 3,783,621
3,783,622
21 3,783,623
36R 3,783,624
45R 3,783,625
46.5 3,783,626
3,783,627

CLASS 62
55 3,783,628
85 3,783,629
98 3,783,630
112 3,783,631
123 3,783,632
168 3,783,633
217 3,783,634
276 3,783,635
353 3,783,636
427 3,783,637

CLASS 64
17A 3,783,638
27NM 3,783,639

CLASS 66
50B 3,783,640
60R 3,783,641
75R 3,783,642
89 3,783,643
95 3,783,644
108R 3,783,645
120 3,783,646
123 3,783,647
168 3,783,648

CLASS 68
5E 3,783,649
12R 3,783,651
18C 3,783,650
23.7 3,783,652
145 3,783,653
200 3,783,654

CLASS 70
1.5 3,783,655
18 3,783,656
52 3,783,657
110 3,783,658
234 3,783,659
363 3,783,660
419 3,783,661

CLASS 71
36 3,784,367
90 3,784,366
119 3,784,368

CLASS 72
1 3,783,662
41 3,783,663
42 3,783,664
81 3,783,665
160 3,783,667
199 3,783,666
283 3,783,668
342 3,783,669
346 3,783,670
392 3,783,671
407 3,783,672
3,783,673
476 3,783,674

CLASS 73
1F 3,783,675
4V 3,783,678
32 3,783,676
41 3,783,677
67.1 Re.27,875
67.7 3,783,679
71.2 3,783,680
119R 3,783,681
139 3,783,682
152 3,783,683
190R 3,783,685
190 3,783,684
194EM 3,783,686
3,783,687
194R 3,783,688
301 3,783,689
328 3,783,690
341 3,783,691
362AR 3,783,692
398C 3,783,693
422GC 3,783,694
422 3,783,695
425.4P 3,783,696
432PS 3,783,697

CLASS 74
5.34 3,784,363
10.2 3,783,698
40 3,783,699
55 3,783,700
87 3,783,701
89 3,783,702
157 3,783,703
231J 3,783,704
234 3,783,705
469 3,783,706
470 3,783,707
553 3,783,708
612 3,783,709
665GA 3,783,710
687 3,783,711
805 3,783,712
865 3,783,713

CLASS 75
.5BB 3,784,369
42 3,784,370
68C 3,784,372
68R 3,784,371
84 3,784,593
128F 3,784,373
129 3,784,374

CLASS 76
37 3,783,714

CLASS 81
15.7 3,783,715
52.4R 3,783,716
119 3,783,717

CLASS 82
2R 3,783,718
21B 3,783,719
34A 3,783,720
82 3,783,721

CLASS 83
1 3,783,722
21 3,783,723
140 3,783,724
326 3,783,725
355 3,783,726
592 3,783,727
620 3,783,728
666 3,783,729

CLASS 84
1.13 3,784,718
94 3,783,730
173 3,783,731
385 3,783,732
402 3,783,733
470 3,784,717

CLASS 85
62 3,783,734

CLASS 86
20R 3,783,735

CLASS 87
29 3,783,736

CLASS 89
7 3,783,737
44R 3,783,738
189 3,783,739

CLASS 90
7 3,783,740
13C 3,783,741

CLASS 91
413 3,783,742
488 3,783,743

CLASS 92
57 3,783,744
83 3,783,745
121 3,783,746
160 3,783,747
249 3,783,748
3,783,749

CLASS 93
32 3,783,750
35R 3,783,751
53SD 3,783,752
58.1 3,783,753

CLASS 95
1R 3,783,754
1.1 3,783,755
4.5 3,783,756
10CE 3,783,757
10CT 3,783,759
10C 3,783,758
11R 3,783,761
11V 3,783,760
31EL 3,783,762
3,783,763
42 3,783,764
3,783,765

CLASS 96
1R 3,784,375
1.5 3,784,376
23 3,784,377
27E 3,784,378
36.2 3,784,379
44 3,784,380
77 3,784,382
94 3,784,381
100 3,784,383

CLASS 98
33R 3,783,766
40D 3,783,771
42 3,783,767
110 3,783,768

CLASS 99
332 3,783,769
348 3,783,770
450.4 3,783,772

CLASS 100
7 3,783,773
214 3,783,774
3,783,775

CLASS 101
7 3,783,776
40 3,783,777
45 3,783,778
127 3,783,779
153 3,783,780
157 3,783,781
216 3,783,782
226 3,783,783
248 3,783,784
328 3,783,785
333 3,783,786

CLASS 102
24R 3,783,787
28A 3,783,789
28R 3,783,788
67 3,783,790
70.2R 3,783,791

CLASS 104
128 3,783,792
130 3,783,793
148MS 3,783,794

CLASS 105
61 3,783,795
199R 3,783,796
251 3,783,797
369A 3,783,798

CLASS 106
39 3,784,384
40R 3,784,385
50 3,784,386
54 3,784,387
73.4 3,784,388
100 3,784,389
139 3,784,390
170 3,784,391
288B 3,784,392
288Q 3,784,393

CLASS 108
19 3,783,799
53 3,783,800
60 3,783,801

CLASS 110
14 3,783,802
165R 3,783,803

CLASS 111
7.4 3,783,804

CLASS 112
2 3,783,805
6 3,783,806
76 3,783,807
114 3,783,808
121.14 3,783,809
159 3,783,810
218R 3,783,811
220 3,783,812
252 3,783,813

CLASS 114
20A 3,783,814
66.5P 3,783,817
208R 3,783,815
230 3,783,816

CLASS 117
1.7 3,784,394
17 3,784,395
17.5 3,784,398
21 3,784,396
37LE 3,784,397
62.1 3,784,399
62.2 3,784,400
3,784,401
69 3,784,402
71M 3,784,403
97 3,784,404

132C 3,784,405
212 3,784,406
227 3,784,407

CLASS 118

4 3,783,818
3,783,819
19 3,783,820
48 3,783,821
49.1 3,783,822
63 3,783,823
3,783,824
422 3,783,825
620 3,783,826
637 3,783,827
3,783,828

CLASS 119

14.03 3,783,830
14.08 3,783,837
17 3,783,829
23 3,783,831
37 3,783,832
44 3,783,833
51.14 3,783,836
96 3,783,834
109 3,783,835

CLASS 122

34 3,783,838

CLASS 123

8.45 3,783,839
32R 3,783,842
52MV 3,783,843
3,783,844
55VE 3,783,845
65B 3,783,840
117A 3,783,846
119A 3,783,847
3,783,848
127 3,783,841
3,783,849
146.5A 3,783,850
185BA 3,783,851

CLASS 124

22 3,783,852

CLASS 126

19R 3,783,853
21R 3,783,854
25R 3,783,855
38 3,783,856
164 3,783,857
247 3,783,858

CLASS 127

37 3,784,408
46A 3,784,409

CLASS 128

2.06E 3,783,865
24R 3,783,859
82.1 3,783,880
92BC 3,783,860
127 3,783,861
132D 3,783,862
134 3,783,863
152 3,783,864
213 3,783,866
230 3,783,867
260 3,783,868
261 3,783,869
276 3,783,870
287 3,783,871
290R 3,783,872
303R 3,783,873
303.1 3,783,874
318 3,783,875
347 3,783,876
419P 3,783,877
3,783,878
570 3,783,879

CLASS 131

21D 3,783,881
70 3,783,882

CLASS 132

91 3,783,883

CLASS 133

1R 3,783,884
5 3,783,885

CLASS 135

45A 3,783,886

CLASS 136

10 3,784,410
87 3,784,411
122 3,784,412
131 3,784,413
175 3,784,414
3,784,415

CLASS 137

38 3,783,887
145 3,783,888
204 3,783,889
315 3,783,890
340 Re.27,874
491 3,783,891
493 3,783,892
527.8 3,783,893
535 3,783,894
564 3,783,897
588 3,783,895
596.2 3,783,898
624.2 3,783,899
625.47 3,783,900
625.64 3,783,901
630.14 3,783,896
803 3,783,902
805 3,783,903
811 3,783,904

CLASS 138

30 3,783,905
103 3,783,906
106 3,783,907
144 3,783,908

CLASS 139

426 3,783,909

CLASS 140

147 3,783,910

CLASS 141

11 3,783,911
46 3,783,912
3,783,913

CLASS 144

2N 3,783,914
134B 3,783,915
172 3,783,916
175 3,783,917
208B 3,783,918

CLASS 145

46 3,783,919

CLASS 148

3 3,784,416
6.15R 3,784,417
12 3,784,418

CLASS 149

2 3,784,419
22 3,784,420
29 3,784,421
88 3,784,422
109 3,784,423

CLASS 150

8 3,783,920

CLASS 151

41.7 3,783,921
41.74 3,783,922

CLASS 152

243 3,783,923
330 3,783,924
356 3,783,925
3,783,926
409 3,783,927

CLASS 156

15 3,784,424
83 3,784,425
132 3,784,426
139 3,784,427
174 3,784,428
175 3,784,429
200 3,784,430
201 3,784,431
244 3,784,432
276 3,784,433
280 3,784,434
293 3,784,435
334 3,784,436
401 3,784,437
487 3,784,438
518 3,784,439

CLASS 157

1.1 3,783,928

CLASS 160

168 3,783,929
199 3,783,930
327 3,783,931

CLASS 161

58 3,784,441
185 3,784,440

CLASS 162

181C 3,784,442

CLASS 164

4 3,783,932
58 3,783,933
282 3,783,934

CLASS 165

44 3,783,935
90 3,783,936
107 3,783,937
166 3,783,938

CLASS 166

81 3,783,939
181 3,783,940
217 3,783,941
244 3,783,942
266 3,783,943
274 3,783,944
305 3,783,945

CLASS 169

2A 3,783,946
40 3,783,947

CLASS 172

49 3,783,948
133 3,783,949
285 3,783,950
311 3,783,951
540 3,783,952

CLASS 173

23 3,783,953
49 3,783,954
50 3,783,955
93.7 3,783,956

CLASS 174

15C 3,784,722
42 3,784,723
48 3,784,724
52R 3,784,725
3,784,727
52 3,784,726
60 3,784,728
73R 3,784,729
75C 3,784,730
87 3,784,731
108 3,784,732
153R 3,784,733

CLASS 176

63 3,784,443

CLASS 177

54 3,783,957

CLASS 178

5.4ST 3,784,734
5.4R 3,784,736
5.4 3,784,735
6 3,784,737
6.5 3,784,738
6.6B 3,784,739
6.8 3,784,740
7.88 3,784,741
3,784,742
22 3,784,743

CLASS 179

1GQ 3,784,744
3,784,746
1HF 3,784,747
1VE 3,784,748
1N 3,784,745
3,784,750
JP 3,784,749
6R 3,784,721
15AQ 3,784,752
15FE 3,784,753
15A 3,784,751
15.55R 3,784,754
16F 3,784,755
3,784,756
18DA 3,784,757
84VF 3,784,758
3,784,759
90L 3,784,760
100.11 3,784,762
100.2MD 3,784,763
100.2ZA 3,784,761

CLASS 180

5R 3,783,958
6A 3,783,959
6.3 3,783,963
14A 3,783,960
33A 3,783,961
44F 3,783,962
64L 3,783,964
79.2R 3,783,966
128 3,783,965

CLASS 181

.5ED 3,783,967
33A 3,783,970
33G 3,783,968
3,783,969

CLASS 184

3R 3,783,971
7E 3,783,973
15R 3,783,972

CLASS 187

8.45 3,783,976
29R 3,783,974
3,783,975
52 3,783,977
73 3,783,978

CLASS 188

1A 3,783,979
73.5 3,783,980
106F 3,783,981
112 3,783,982
189 3,783,983
196BA 3,783,984

CLASS 192

3.54 3,783,985

CLASS 194

2 3,783,986
4G 3,783,989
10 3,783,987
11 3,783,988

CLASS 195

28N 3,784,444
28R 3,784,445
30 3,784,446
81 3,784,447
139 3,784,448

CLASS 198

20R 3,783,990
33AB 3,783,991
3,783,992
140 3,783,993
179 3,783,994

CLASS 200

5R 3,784,765
42T 3,784,766
48V 3,784,767
50AA 3,784,764
52R 3,784,768
3,784,769
61.36 3,784,770
61.45M 3,784,773
82B 3,784,771
83Y 3,784,772
144B 3,784,774
146R 3,784,775

CLASS 202

180 3,784,449
185 3,784,450

CLASS 204

20 3,784,451
26 3,784,452
52R 3,784,454
130 3,784,455
131 3,784,453
153 3,784,456
180P 3,784,457
192 3,784,458
195S 3,784,459
301 3,784,460
306 3,784,461

CLASS 206

7D 3,783,995
17.5 3,783,996
43 3,783,997
3,783,998
45.23 3,783,999
47R 3,784,000
52F 3,784,001
65C 3,784,002
65E 3,784,003
80A 3,784,004
84 3,784,005

CLASS 208

11 3,784,462
3,784,464
74 3,784,463
208R 3,784,465
361 3,784,466

CLASS 209

73 3,784,006
85 3,784,007

CLASS 210

31C 3,784,467
44 3,784,468
58 3,784,469
104 3,784,008
114 3,784,009
3,784,010
168 3,784,011
170 3,784,012
242 3,784,013
263 3,784,014
321 3,784,470
322 3,784,015
333 3,784,016
354 3,784,017
393 3,784,018
486 3,784,019

CLASS 211

1.3 3,784,020
43 3,784,021
49D 3,784,022
105.1 3,784,023
131 3,784,024
148 3,784,025
181 3,784,026
184 3,784,027

CLASS 212

11 3,784,028
14 3,784,029

CLASS 213

76 3,784,030

CLASS 214

1BC 3,784,031
15R 3,784,032
16.4A Re.27,871
19 3,784,033
21 3,784,034
75H 3,784,035
86A 3,784,036
356 3,784,037

CLASS 215

1C 3,784,038
11E 3,784,039
31 3,784,040
40 3,784,041

CLASS 219

10.43 3,784,780
10.55 3,784,776
3,784,777
3,784,781
60A 3,784,778
117 3,784,779
125 3,784,782
213 3,784,783
222 3,784,784
301 3,784,785
368 3,784,786
386 3,784,787
441 3,784,788
536 Re.27,877

CLASS 220

3.3 3,784,042
4F 3,784,043
19 3,784,044
22.3 3,784,054
27 3,784,045
35 3,784,046
40R 3,784,047
54 3,784,048
63 3,784,049
85 3,784,050
93 3,784,051
97C 3,784,052
113 3,784,053

CLASS 221

46 3,784,055
63 3,784,056
196 3,784,057

CLASS 222

57 3,784,058
86 3,784,059
153 3,784,060
181 Re.27,876
200 3,784,061
377 3,784,062
394 3,784,063
397 3,784,064
413 3,784,065
514 3,784,066

CLASS 223

114 3,784,067

CLASS 224

5V 3,784,068
49 3,784,069

CLASS 225

1 3,784,070

CLASS 226

3,784,071
3,784,072
47 3,784,073
127 3,784,074
143 3,784,075
179 3,784,076

CLASS 227

8 3,784,077
13 3,784,078

CLASS 228

1 3,784,079
2 3,784,080
17 3,784,081

CLASS 229

14B Re.27,872
30 3,784,082
34R 3,784,083
39R Re.27,870
54R 3,784,084
55 3,784,085
3,784,086
62 3,784,087
68 3,784,088

CLASS 232

24 3,784,089
44 3,784,090

CLASS 233

7 3,784,091
20R 3,784,092

CLASS 235

61.11D 3,784,793
61.11E 3,784,791
3,784,792
3,784,794
3,784,795
61.12M 3,784,796
61.6A 3,784,789
61.7B 3,784,790
70R 3,784,093
88 3,784,797
150.27 3,784,800
151.11 3,784,798
153AK 3,784,801
168 3,784,802
195 3,784,803

CLASS 236

68C 3,784,094
101 3,784,095

CLASS 237

1R 3,784,096

CLASS 238

310 3,784,097
349 3,784,098

CLASS 239

2R 3,784,099
11 3,784,100
17 3,784,101
36 3,784,102
101 3,784,103
102 3,784,104
3,784,105
177 3,784,106
208 3,784,107
264 3,784,108
265.19 3,784,109
304 3,784,110
427.3 3,784,111
443 3,784,112
460 3,784,113

CLASS 240

2FD 3,784,804
7.1LJ 3,784,810
25 3,784,806
41.5 3,784,807
47 3,784,808
49 3,784,809
81LD 3,784,811

CLASS 241

24 3,784,114
30 3,784,115
46.17 3,784,116
191 3,784,117
282.1 3,784,118

CLASS 242

18DD 3,784,120
18R 3,784,119
43 3,784,121
56A 3,784,122
75.53 3,784,123
84.1R 3,784,124
96 3,784,125
158.3 3,784,126
199 3,784,127
201 3,784,128
3,784,129

CLASS 244

76J 3,784,130
102R 3,784,131
137R 3,784,132

CLASS 245

10 3,784,133

CLASS 246

169R 3,784,813
446 3,784,134

CLASS 248

11 3,784,135
44 3,784,136
63 3,784,137
96 3,784,138
210 3,784,139
214 3,784,140
3,784,141
311 3,784,142
316R 3,784,143
317 3,784,144
334 3,784,145
358R 3,784,146
371 3,784,147
382 3,784,148
478 3,784,149
496 3,784,150

CLASS 249

18 3,784,151
80 3,784,152

CLASS 250

203CT 3,784,829
213VT 3,784,830
3,784,831
226 3,784,832
237G 3,784,833
260 3,784,828
266 3,784,822
273 3,784,816
290 3,784,814
307 3,784,815
328 3,784,826
362 3,784,820
366 3,784,819
368 3,784,818
3,784,821
370 3,784,823
467 3,784,817
477 3,784,834
480 3,784,835
495 3,784,836
496 3,784,825

498 3,784,827
501 3,784,824
523 3,784,837
536 3,784,838

CLASS 251

25 3,784,153
30 3,784,154
181 3,784,155
250 3,784,156
306 3,784,157
327 3,784,158

CLASS 252

21 3,784,471
25 3,784,472
51.5A 3,784,473
51.5R 3,784,474
89 3,784,475
109 3,784,476
162 3,784,477
192 3,784,478
358 3,784,479
404 3,784,480
431C 3,784,481
431P 3,784,482
437 3,784,483
442 3,784,484
467 3,784,485
546 3,784,486

CLASS 254

45 3,784,159
86R 3,784,160
88 3,784,161
124 3,784,162
166 3,784,163
3,784,164
168 3,784,165
186 3,784,166

CLASS 256

13.1 3,784,167

CLASS 259

1R 3,784,168
4 3,784,169
65 3,784,170

CLASS 260

2.1C 3,784,489
2.5AM 3,784,594
2.5F 3,784,487
2.5M 3,784,488
3,784,490
8 3,784,491
13R 3,784,492
17.3 3,784,494
17.5 3,784,493
18TN 3,784,595
18N 3,784,495
23R 3,784,596
29.3 3,784,496
29.6TA 3,784,498
29.6XA 3,784,497
29.6S 3,784,499
30.4R 3,784,500
31.6 3,784,501
33.6PQ 3,784,502
33.6UB 3,784,503
33.8R Re.27,880
37SB 3,784,505
37N 3,784,504
39R 3,784,506
45.7P 3,784,507
45.75B 3,784,509
45.75N 3,784,510
45.95P 3,784,511
3,784,512
47EM 3,784,508
51.5 3,784,514
3,784,515
3,784,516
63R 3,784,517
67FP 3,784,519
75NB 3,784,521
75R 3,784,520
77.5AP 3,784,601
77.5CR 3,784,522
3,784,524
78A 3,784,523
78.4EP 3,784,525
78.5R 3,784,526
78.5T 3,784,527
3,784,528
79.3M 3,784,529
80.3N 3,784,597
80.7 3,784,530
85.3H 3,784,531
86.1E 3,784,532
3,784,540
94.2T Re.27,878
94.9C 3,784,539
94.9R 3,784,538
97.5 3,784,537
112 3,784,536
112.5 3,784,535
128 3,784,534
210R 3,784,541
239.3D 3,784,542
239.55D 3,784,598
240G 3,784,543
240J 3,784,545
242 3,784,599
249.8 3,784,544
256.5R 3,784,546
257 3,784,547
268PC 3,784,548
287R 3,784,549
3,784,550
293.66 3,784,551
293.69 3,784,632
294.8F 3,784,552
297.5 3,784,553
302E 3,784,554
306.8D 3,784,555
308A 3,784,569
308B 3,784,570
308R 3,784,556
309 3,784,557
309.2 3,784,571
309.6 3,784,633
327S 3,784,572
343.2R 3,784,600
346.2M 3,784,602
346.3 3,784,573
347.7 3,784,574
349 3,784,603
396R 3,784,575
397.2 3,784,576
404 3,784,577
410.9N 3,784,578
414 3,784,579
429.7 3,784,580
448.2Q 3,784,637
464 3,784,581
465D 3,784,558
3,784,559
3,784,582
465.3 3,784,560
3,784,561
468D 3,784,634
3,784,636
468J 3,784,562
471C 3,784,563
471R 3,784,635
472 3,784,564
479R 3,784,513
482R 3,784,565
486R 3,784,566
488F 3,784,567
491 3,784,568
515P 3,784,639
519 3,784,640
526S 3,784,638
556A 3,784,641
558A 3,784,642
564A 3,784,643
566R 3,784,644
570R 3,784,604
583N 3,784,645
590 3,784,605
3,784,606
593R 3,784,646
609D 3,784,608
3,784,610
609R 3,784,607
611R 3,784,609
613D 3,784,611
615A 3,784,612
622P 3,784,613
638R 3,784,616
641 3,784,614
648R 3,784,615
652R 3,784,518
668R 3,784,617
3,784,618
3,784,619
669A 3,784,620
672T 3,784,621
676R 3,784,622
677R 3,784,623
681.5R 3,784,624
3,784,625
3,784,626
683.15D 3,784,629
3,784,630
3,784,631
683.3 3,784,627
683.42 3,784,628
830TW 3,784,583
3,784,584
3,784,647
856 3,784,648
861 3,784,585
3,784,586
874 3,784,649
876B 3,784,587
928 3,784,588
929 3,784,653
941 3,784,589
944 3,784,590
948 3,784,650
952 3,784,591
953 3,784,592
956 3,784,651
958 3,784,652
3,784,654

CLASS 261

29 3,784,171
44R 3,784,172
3,784,173
65 3,784,174
114R 3,784,175

CLASS 264

1 3,784,655
8 3,784,656
40 3,784,657
45 3,784,658
47 3,784,659
88 3,784,660
95 3,784,662
98 3,784,661
145 3,784,667
146 3,784,533
230 3,784,663
234 3,784,666
246 3,784,664
261 3,784,665
310 3,784,668

CLASS 266

1R 3,784,176
34T 3,784,177
38 3,784,178

CLASS 267

35 3,784,179
66 3,784,180
140 3,784,181
3,784,182

CLASS 270

31 3,784,184
37 3,784,185
64 3,784,186
3,784,187
79 3,784,188

CLASS 271

45 3,784,189
80 3,784,190
3,784,191

CLASS 272

57J 3,784,192
68 3,784,193
79C 3,784,194
83R 3,784,195

CLASS 273

1E 3,784,196
3,784,197
63A 3,784,198
95R 3,784,199
3,784,200
102.1E 3,784,201
106A 3,784,202
126A 3,784,203
128R 3,784,204
131AC 3,784,205
158 3,784,206
176A 3,784,207
183A 3,784,208
218 3,784,209

CLASS 274

1A 3,784,210
9R 3,784,211

CLASS 277

22 3,784,212
40 3,784,213
116.8 3,784,214
220 3,784,215

CLASS 280

6H 3,784,228
11.17 3,784,217
11.35D 3,784,216
43.23 3,784,218
104 3,784,219
124F 3,784,220
3,784,221
150AB 3,784,222
3,784,223
3,784,225
150B 3,784,224
157 3,784,226
166 3,784,227
446R 3,784,229
491 3,784,230
502 3,784,231

CLASS 281

20 3,784,232

CLASS 285

12 3,784,233
18 3,784,234
21 3,784,235
45 3,784,236
208 3,784,237
286 3,784,238
293 3,784,239

CLASS 292

111 3,784,240
216 3,784,241
300 3,784,243
336.3 3,784,242

CLASS 293

25 3,784,244

CLASS 294

54 3,784,245
87.2 3,784,246

CLASS 296

20 3,784,183
23B 3,784,248
75 3,784,247

CLASS 297

162 3,784,249
184 3,784,250
248 3,784,251
364 3,784,252
410 3,784,253
445 3,784,254

CLASS 298

8T 3,784,255

CLASS 299

12 3,784,256
31 3,784,257
34 3,784,258
84 3,784,259

CLASS 301

97 3,784,260

CLASS 302

2R 3,784,261

CLASS 305

11 3,784,262
22 3,784,263

CLASS 307

10AT 3,784,839
11 3,784,840
64 3,784,841
92 3,784,842
117 3,784,843
212 3,784,854
233 3,784,845
270 3,784,844
293 3,784,846
304 3,784,847
308 3,784,848

CLASS 308

8.2 3,784,264
73 3,784,265
160 3,784,266
174 3,784,267
187.2 3,784,268

CLASS 310

8.2 3,784,849
49 3,784,850
58 3,784,851
105 3,784,852
178 3,784,853
227 3,784,855
239 3,784,856

CLASS 312

136 3,784,269
236 3,784,270
245 3,784,272
257SK 3,784,273
257R 3,784,271
330 3,784,274

CLASS 313

63 3,784,858
75 3,784,859
93 3,784,860
117 3,784,861
174 3,784,862
3,784,863
217 3,784,864
274 3,784,865
299 3,784,866
318 3,784,867

CLASS 315

5.41 3,784,873
8 3,784,868
13C 3,784,869
20 3,784,870
27TD 3,784,857
3,784,871
3,784,872
294 3,784,874
3,784,875

CLASS 316

19 3,784,275

CLASS 317

2R 3,784,876
33R 3,784,877
101CE 3,784,878
136 3,784,879
141S 3,784,881
157 3,784,882
234R Re.27,879
3,784,883
3,784,884
3,784,885
235R 3,784,886
258 3,784,887

CLASS 318

138 3,784,880
3,784,888
171 3,784,889
345 3,784,890
633 3,784,891

CLASS 320

40 3,784,892

CLASS 321

11 3,784,893
47 3,784,894

CLASS 322

2R 3,784,895
20 3,784,896

CLASS 323

93 3,784,897

CLASS 324

.5R 3,784,898
6 3,784,899
10 3,784,900
16R 3,784,901
32 3,784,902
38 3,784,904
51 3,784,903
57DE 3,784,907
61QS 3,784,905
62 3,784,906
3,784,908
71EB 3,784,909
73AT 3,784,910
95 3,784,911
130 3,784,912
173 3,784,913

CLASS 325

30 3,784,914
130 3,784,799
367 3,784,915
419 3,784,916
422 3,784,917

CLASS 328

97 3,784,918
127 3,784,919
3,784,920
135 3,784,921

CLASS 329

104 3,784,922

CLASS 330

22 3,784,923
30R 3,784,924
34 3,784,925
53 3,784,926

CLASS 331

94.5 3,784,927
3,784,928
3,784,929
183 3,784,930

CLASS 333

6 3,784,931
9 3,784,932
26 3,784,933
29 3,784,934
70CR 3,784,935
71 3,784,936
84M 3,784,937
95 3,784,938
98R 3,784,939

CLASS 335

18 3,784,940
196 3,784,941
206 3,784,942
266 3,784,943
276 3,784,944
302 3,784,945

CLASS 336

59 3,784,946

CLASS 337

320 3,784,947

CLASS 338

183 3,784,948
196 3,784,949
200 3,784,950
262 3,784,951

CLASS 339

12V 3,784,952
14R 3,784,953
17LM 3,784,954
17R 3,784,955
18R 3,784,956
19 3,784,957
45R 3,784,958
60M 3,784,959
91R 3,784,960
107 3,784,961
121 3,784,962
198P 3,784,963
219R 3,784,964
258R 3,784,965
276T 3,784,966

CLASS 340

3R 3,784,805
15.5TC 3,784,967
25 3,784,968
27NA 3,784,969
33 3,784,970
40 3,784,971
52E 3,784,972
59 3,784,973
67 3,784,974
76 3,784,975
146.1AB 3,784,977
3,784,978
146.1AG 3,784,976
146.2 3,784,979
3,784,980
146.3H 3,784,981
146.3J 3,784,982
172.5 3,784,983

CLASS 350

3.5 3,784,276
6 3,784,277
10 3,784,278
103 3,784,279
150 3,784,280
151 3,784,281
175R 3,784,282
184 3,784,283
186 3,784,284
187 3,784,285
220 3,784,286
226 3,784,287
302 3,784,288
321 3,784,289

CLASS 352

91 3,784,290
169 3,784,291
170 3,784,292
208 3,784,293

CLASS 353

95 3,784,295
120 3,784,296

CLASS 355

3 3,784,294
3,784,297
3,784,299
3,784,300
7 3,784,301
10 3,784,302
41 3,784,812
50 3,784,303
67 3,784,304
109 3,784,298

CLASS 356

3 3,784,305
23 3,784,306
51 3,784,307
128 3,784,308
156 3,784,309
181 3,784,310

CLASS 401

137 3,784,311

CLASS 404

35 3,784,312
51 3,784,313
117 3,784,314

CLASS 408

92 3,784,315
204 3,784,316

CLASS 415

144 3,784,317
158 3,784,318

CLASS 416

135 3,784,319
215 3,784,320
223 3,784,321
229 3,784,322

CLASS 417

53 3,784,323
67 3,784,324
165 3,784,325
221 3,784,326
222 3,784,327
3,784,328
252 3,784,329
273 3,784,331
279 3,784,330
319 3,784,332
383 3,784,333
415 3,784,334
539 3,784,335

CLASS 418

61 3,784,336
142 3,784,337

CLASS 423

43 3,784,669
80 3,784,670
88 3,784,671
202 3,784,672
203 3,784,673
213.5 3,784,675
242 3,784,676
249 3,784,674
252 3,784,677
321 3,784,678

447	3,784,679	243	3,784,692	311	3,784,698	357	3,784,708	352	3,784,343	171	3,784,713
571	3,784,680	244	3,784,688		3,784,700		**CLASS 425**	387	3,784,344		3,784,714
645	3,784,682	250	3,784,689	317	3,784,699	28B	3,784,338		3,784,347	172	3,784,715
	CLASS 424		3,784,693		3,784,701	133	3,784,339	402	3,784,349	289	3,784,716
4	3,784,681	267	3,784,690		3,784,702	141	3,784,340	445	3,784,350		**CLASS 431**
19	3,784,683	273	3,784,691		3,784,703	280	3,784,341		**CLASS 426**	66	3,784,351
37	3,784,684	304	3,784,694		3,784,704	292	3,784,342	24	3,784,709	277	3,784,352
70	3,784,685	308	3,784,695		3,784,705	324B	3,784,348	128	3,784,710	329	3,784,353
94	3,784,686		3,784,696	342	3,784,706	325	3,784,345	130	3,784,711		**CLASS 432**
212	3,784,687	309	3,784,697	343	3,784,707	326B	3,784,346	167	3,784,712	152	3,784,354

CLASSIFICATION OF DESIGNS

D02—	343 229,796		252 229,810		219 229,824	D30—	8 229,838	D48—	2 229,851		11B 229,865
D06—	13 229,799		229,811		258 229,825		9 229,839		229,852		R 229,864
	26 229,798	D07—	1 229,812		277 229,826		12 229,840		23A 229,853	D65—	1 229,866
	32 229,800		21 229,813	D12—	15 229,827	D34—	3 229,841		24 229,854	D67—	3B 229,867
	47 229,801		36 229,814	D13—	1L 229,828		5GC 229,843		27R 229,855	D70—	1 229,868
	229,802		48 229,815	D14—	6A 229,829		GH 229,844	D52—	1 229,856	D83—	12R 229,869
	60 229,803		71 229,816	D26—	5C 229,830		229,842		6B 229,858	D87—	2 229,870
	78 229,804		93 229,817		12 229,831		15AJ 229,845		R 229,857		3F 229,871
	97 229,805		128 229,818		14A 229,836		JJ 229,846	D56—	4B 229,859	D90—	5 229,872
	125 229,806		130 229,819		229,837		MM 229,847		R 229,860		20R 229,873
	132 229,807		207 229,820		F 229,832	D35—	2B 229,848	D57—	1C 229,861	D92—	2 229,874
	177 229,808	D08—	220 229,821		H 229,833	D45—	1 229,849	D61—	B 229,862	D95—	3A 229,875
	192 229,809		236 229,822		K 229,834		15 229,850	D64—	10 229,863		229,876
	251 229,797	D09—	183 229,823		R 229,835						

CLASSIFICATION OF PLANTS

P. —	11 3,431	P. —	18 3,423	P. —	3,427	P. —	3,429	P. —	74 3,425	P. —	78 3,424
P. —	14 3,432	P. —	69 3,426	P. —	3,428	P. —	73 3,430				

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama..... 1
Alaska..... 2
American Samoa..... 3
Arizona..... 4
Arkansas..... 5
California..... 6
Canal Zone..... 7
Colorado..... 8
Connecticut..... 9
Delaware..... 10
District of Columbia..... 11
Florida..... 12
Georgia..... 13
Guam..... 14
Hawaii..... 15
Idaho..... 16
Illinois..... 17
Indiana..... 18
Iowa..... 19
Kansas..... 20
Kentucky..... 21
Louisiana..... 22
Maine..... 23
Maryland..... 24
Massachusetts..... 25
Michigan..... 26
Minnesota..... 27
Mississippi..... 28
Missouri..... 29
Montana..... 30
Nebraska..... 31
Nevada..... 32
New Hampshire..... 33
New Jersey..... 34
New Mexico..... 35
New York..... 36
North Carolina..... 37
North Dakota..... 38
Ohio..... 39
Oklahoma..... 40
Oregon..... 41
Pennsylvania..... 42
Puerto Rico..... 43
Rhode Island..... 44
South Carolina..... 45
South Dakota..... 46
Tennessee..... 47
Texas..... 48
Utah..... 49
Vermont..... 50
Virginia..... 51
Virgin Islands..... 52
Washington..... 53
West Virginia..... 54
Wisconsin..... 55
Wyoming..... 56
U.S. Air Force..... 57
U.S. Army..... 58
U.S. Navy..... 59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,783,522
4 : 3,783,616
3,783,792
3,783,928
3,784,029
3,784,079
3,784,104
3,784,745
3,784,750
3,784,753
3,784,845
3,784,853
3,784,884
3,784,891
5 : 3,784,013
3,784,067
3,784,321
3,784,733
6 : Re.27,872
3,783,456
3,783,462
3,783,478
3,783,496
3,783,505
3,783,514
3,783,523
3,783,524
3,783,525
3,783,531
3,783,544
3,783,548
3,783,554
3,783,562
3,783,564
3,783,573
3,783,579
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3,783,598
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3,783,659
3,783,671
3,783,675
3,783,690
3,783,703
3,783,711
3,783,729
3,783,731
3,783,739
3,783,746
3,783,763
3,783,815
3,783,830
3,783,832
3,783,843
3,783,855
3,783,856
3,783,857
3,783,867
3,783,868
3,783,891
3,783,909
3,783,944
3,783,954
3,783,959
3,783,960
3,783,964
3,783,968
3,784,047
3,784,057
3,784,059
3,784,062
3,784,063
3,784,076
3,784,095
3,784,097
3,784,101
3,784,102
3,784,136
3,784,140
3,784,146
3,784,161
3,784,170
3,784,183
3,784,190
3,784,197
3,784,198
3,784,202
3,784,210
3,784,211
3,784,218
3,784,227
3,784,247
3,784,252
3,784,274
3,784,276
3,784,296
3,784,312
3,784,319
3,784,351
3,784,352
3,784,357
3,784,364
3,784,379
3,784,384
3,784,403
3,784,420
3,784,422
3,784,434
3,784,435
3,784,441
3,784,449
3,784,470
3,784,472
3,784,474
3,784,483
3,784,484
3,784,552
3,784,571
3,784,589
3,784,616
3,784,622
3,784,725
3,784,726
3,784,730
3,784,766
3,784,799
3,784,812
3,784,815
3,784,827
3,784,831
3,784,835
3,784,848
3,784,867
3,784,876
3,784,883
3,784,899
3,784,908
3,784,918
3,784,924
3,784,933
3,784,937
3,784,950
3,784,956
3,784,959
3,784,963
3,784,966
3,784,971
3,784,972
3,784,974
8 : 3,783,949
3,784,099
3,784,125
3,784,162
3,784,164
3,784,311
3,784,829
3,784,905
9 : 3,783,493
3,783,510
3,783,545
3,783,546
3,783,647
3,783,723
3,783,769
3,783,851
3,783,874
3,783,991
3,784,000
3,784,019
3,784,193
3,784,316
3,784,326
3,784,363
3,784,440
3,784,458
3,784,503
3,784,527
3,784,585
3,784,591
3,784,606
3,784,695
3,784,737
3,784,744
3,784,819
3,784,822
3,784,900
3,784,949
3,784,961
3,784,977
10 : 3,783,629
3,784,086
3,784,495
3,784,501
3,784,520
3,784,557
3,784,575
3,784,615
3,784,713
3,784,714
12 : 3,783,451
3,783,475
3,783,688
3,783,756
3,783,808
3,783,883
3,784,036
3,784,050
3,784,085
3,784,208
3,784,306
3,784,494
3,784,710
3,784,765
3,784,805
3,784,923
13 : 3,783,479
3,783,513
3,784,053
3,784,078
14 : 3,783,997
15 : 3,784,093
17 : 3,783,469
3,783,485
3,783,491
3,783,498
3,783,509
3,783,549
3,783,551
3,783,571
3,783,577
3,783,578
3,783,580
3,783,628
3,783,633
3,783,784
3,783,785
3,783,786
3,783,876
3,783,892
3,783,911
3,783,915
3,783,918
3,783,921
3,783,933
3,783,946
3,783,947
3,783,962
3,783,966
3,783,970
3,783,986
18 : 3,783,480
3,783,987
3,783,989
3,783,999
3,784,002
3,784,003
3,784,004
3,784,011
3,784,021
3,784,023
3,784,025
3,784,030
3,784,039
3,784,045
3,784,052
3,784,055
3,784,087
3,784,110
3,784,111
3,784,127
3,784,147
3,784,154
3,784,189
3,784,191
3,784,199
3,784,213
3,784,246
3,784,269
3,784,293
3,784,304
3,784,305
3,784,394
3,784,491
3,784,497
3,784,535
3,784,536
3,784,545
3,784,573
3,784,598
3,784,652
3,784,658
3,784,674
3,784,683
3,784,702
3,784,736
3,784,769
3,784,801
3,784,821
3,784,878
3,784,932
3,784,962
3,783,480
3,783,797
3,783,823

3,783,897
3,783,932
3,783,992
3,784,165
3,784,267
3,784,555
3,784,613
3,784,668
3,784,686
3,784,748
3,784,760
3,784,857
3,784,903
19 : 3,783,566
3,783,801
3,783,953
3,784,409
3,784,707
3,784,781
3,784,785
20 : 3,783,541
3,783,982
21 : 3,783,680
3,783,853
3,783,854
3,784,235
3,784,599
22 : 3,783,622
3,783,833
3,783,906
3,783,965
3,784,007
3,784,066
3,784,372
3,784,423
3,784,486
23 : 3,783,565
3,784,419
3,784,477
3,784,496
24 : 3,783,486
3,783,535
3,783,536
3,783,730
3,783,771
3,783,806
3,783,814
3,783,875
3,783,978
3,784,084
3,784,103
3,784,138
3,784,171
3,784,201
3,784,215
3,784,392
3,784,442
3,784,467
3,784,524
3,784,751
3,784,786
3,784,846
25 : 3,783,452
3,783,463
3,783,464
3,783,481
3,783,507
3,783,528
3,783,555
3,783,685
3,783,689
3,783,692
3,783,715
3,783,726
3,783,760
3,783,764
3,783,773
3,783,822
3,783,859
3,783,878
3,783,913
3,783,967
3,784,118
3,784,123
3,784,277
3,784,287
3,784,388
3,784,471
3,784,547
3,784,638
3,784,656
3,784,731
3,784,763
3,784,795
3,784,840
3,784,860
3,784,902
3,784,910
3,784,913
3,784,935
3,784,979
26 : Re.27,873
3,783 '49
3,783,455
3,783,472
3,783,561

3,783,570
3,783,611
3,783,651
3,783,709
3,783,734
3,783,744
3,783,841
3,783,846
3,783,847
3,783,889
3,783,963
3,783,974
3,783,976
3,783,983
3,784,015
3,784,017
3,784,028
3,784,080
3,784,082
3,784,200
3,784,212
3,784,222
3,784,223
3,784,225
3,784,241
3,784,242
3,784,288
3,784,327
3,784,328
3,784,336
3,784,359
3,784,370
3,784,371
3,784,404
3,784,417
3,784,453
3,784,459
3,784,479
3,784,488
3,784,500
3,784,505
3,784,508
3,784,541
3,784,576
3,784,592
3,784,607
3,784,608
3,784,610
3,784,611
3,784,682
3,784,722
3,784,724
3,784,779
3,784,789
3,784,921
3,784,941
3,784,947
3,784,973
27 : 3,783,450
3,783,511
3,783,521
3,783,547
3,783,593
3,783,753
3,783,888
3,784,083
3,784,094
3,784,163
3,784,205
3,784,263
3,784,395
3,784,502
3,784,533
3,784,719
3,784,787
3,784,843
3,784,872
29 : 3,783,777
3,783,779
3,783,820
3,783,831
3,783,870
3,783,895
3,783,996
3,783,998
3,784,229
3,784,518
3,784,544
3,784,563
3,784,620
3,784,624
3,784,625
3,784,727
3,784,729
31 : 3,783,914
3,784,081
32 : 3,784,142
3,784,669
34 : Re.27,871
Re.27,877
Re.27,880
3,783,467
3,783,471
3,783,520
3,783,621
3,783,660

35 : 3,783,453
3,784,216
3,784,646
36 : Re.27,876
3,783,457
3,783,459
3,783,488
3,783,490
3,783,516
3,783,517
3,783,534
3,783,553
3,783,576
3,783,582
3,783,588
3,783,590
3,783,607
3,783,636
3,783,638
3,783,648
3,783,654
3,783,655
3,783,661
3,783,666
3,783,682
3,783,697
3,783,721
3,783,733
3,783,747
3,783,755
3,783,768
3,783,795
3,783,817
3,783,826
3,783,836
3,783,844
3,783,848
3,783,861
3,783,869
3,783,872
3,783,886
3,783,910
3,783,919
3,783,958
3,783,969
3,783,995
3,784,001
3,784,012
3,784,027
3,784,043
3,784,069

3,784,109
3,784,135
3,784,145
3,784,150
3,784,166
3,784,182
3,784,194
3,784,203
3,784,207
3,784,240
3,784,280
3,784,289
3,784,294
3,784,299
3,784,300
3,784,302
3,784,303
3,784,356
3,784,362
3,784,375
3,784,376
3,784,382
3,784,386
3,784,405
3,784,411
3,784,424
3,784,439
3,784,478
3,784,537
3,784,566
3,784,609
3,784,617
3,784,618
3,784,619
3,784,621
3,784,641
3,784,645
3,784,663
3,784,672
3,784,701
3,784,704
3,784,712
3,784,715
3,784,720
3,784,738
3,784,746
3,784,747
3,784,772
3,784,773
3,784,803
3,784,811
3,784,836
3,784,838
3,784,847
3,784,854
3,784,856
3,784,877
3,784,887
3,784,893
3,784,907
3,784,912
3,784,930
3,784,957
3,784,976
3,784,982
37 : 3,783,492
3,784,088
3,784,120
3,784,137
3,784,224
3,784,346
3,784,427
3,784,511
3,784,512
3,784,806
3,784,940
38 : 3,783,950
3,784,100
39 : Re.27,874
Re.27,878
Re.27,879
3,783,474
3,783,494
3,783,501
3,783,518
3,783,529
3,783,537
3,783,559
3,783,634
3,783,652
3,783,674
3,783,700
3,783,717
3,783,719
3,783,724
3,783,743
3,783,772
3,783,783
3,783,824
3,783,860
3,783,863
3,783,890
3,783,900
3,783,908
3,783,912
3,783,920

3,783,922
3,783,935
3,783,993
3,784,005
3,784,035
3,784,038
3,784,048
3,784,058
3,784,071
3,784,089
3,784,121
3,784,133
3,784,181
3,784,192
3,784,206
3,784,220
3,784,231
3,784,243
3,784,255
3,784,259
3,784,261
3,784,268
3,784,318
3,784,331
3,784,333
3,784,335
3,784,337
3,784,341
3,784,401
3,784,426
3,784,431
3,784,437
3,784,455
3,784,475
3,784,513
3,784,517
3,784,521
3,784,522
3,784,529
3,784,530
3,784,565
3,784,580
3,784,587
3,784,629
3,784,630
3,784,631
3,784,665
3,784,673
3,784,680
3,784,709
3,784,780
3,784,792
3,784,818
3,784,820
3,784,865
3,784,952
3,784,958
3,784,964
3,784,975
3,784,978
40 : 3,783,460
3,783,542
3,783,619
3,783,683
3,783,834
3,783,945
3,783,956
3,784,009
3,784,010
3,784,347
3,784,572
3,784,623
3,784,627
3,784,628
3,784,637
3,784,639
3,784,740
3,784,943
41 : 3,783,550
3,783,623
3,784,106
3,784,148
3,784,768
42 : 3,783,466
3,783,487
3,783,499
3,783,502
3,783,558
3,783,581
3,783,591
3,783,632
3,783,662
3,783,669
3,783,687
3,783,696
3,783,708
3,783,712
3,783,736
3,783,776
3,783,835
3,783,907
3,784,014
3,784,054
3,784,114
3,784,116
3,784,119

3,784,126
3,784,139
3,784,144
3,784,176
3,784,177
3,784,180
3,784,196
3,784,209
3,784,221
3,784,230
3,784,236
3,784,278
3,784,308
3,784,315
3,784,358
3,784,365
3,784,373
3,784,399
3,784,400
3,784,460
3,784,485
3,784,489
3,784,498
3,784,531
3,784,532
3,784,583
3,784,655
3,784,657
3,784,675
3,784,687
3,784,700
3,784,703
3,784,716
3,784,764
3,784,774
3,784,804
3,784,813
3,784,817
3,784,842
3,784,870
3,784,892
3,784,906
3,784,917
3,784,925
3,784,953
3,784,955
3,784,960
3,784,983
44 : 3,784,060
3,784,077
3,784,195
3,784,965
45 : 3,783,596
3,783,852
3,784,667
47 : 3,783,484
3,784,034
3,784,160
3,784,186
3,784,499
3,784,593
3,784,649
48 : Re.27,875
3,783,679
3,783,767
3,783,849
3,783,884
3,783,899
3,783,939
3,783,940
3,783,941
3,783,942
3,783,943
3,784,049
3,784,124
3,784,155
3,784,157
3,784,214
3,784,234
3,784,238
3,784,239
3,784,248
3,784,250
3,784,264
3,784,270
3,784,313
3,784,349
3,784,360
3,784,402
3,784,463
3,784,466
3,784,468
3,784,482
3,784,539
3,784,579
3,784,721
3,784,732
3,784,828
3,784,898
3,784,967
3,784,970
3,784,981
49 : 3,783,461
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50 : 3,783,737
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52 : 3,784,008
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3,784,515
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3,784,777

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54 : 3,783,798
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55 : 3,783,458
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3,783,556
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DESIGN PATENTS

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18 : 229,850
20 : 229,822
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26 : 229,870
27 : 229,801
229,802
229,803

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34 : 229,804
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35 : 229,796
36 : 229,797
229,805

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229,862
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39 : 229,843

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229,873
40 : 229,809
42 : 229,846
47 : 229,871
48 : 229,800
49 : 229,838
229,840
55 : 229,816
229,828
229,841

PLANT PATENTS

6 : 3,423

3,430

3,431

3,432

39 : 3,424

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U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, *Secretary*